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Food Allergy*

The Value of the Leukopenic Index in Food-Sensitive Patients

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OKLAHOMA CITY, OKLA.

The protean manifestations of the allergic state have made the medical profession realize the importance of the field of allergy. Today it is conceded that a large number of symptom-complexes may be wholly or partially due to contact, inhaled or ingested allergens. That food allergy plays an important role in many cases of dermatoses, hay fever, asthma, allergic headaches, and symptoms referable to the gastrointestinal tract is well recognized. The evaluation of the food factor in allergic diseases is much more difficult than that of the other two possible allergic groups, namely, the contactants and the inhalants.

Those working in the field of allergy have found that skin testing is much less reliable in patients suffering from allergic symptoms due to the ingested group than where it is due to the contact and inhalant groups. For this reason, other methods, such as elimination and addition diets, as suggested by Rowe, and the leukopenic response to food, as suggested by Vaughan, [1,2] have been added to our allergic diagnostic armamentarium. Only a few have been able to use the diet elimination and addition methods to any advantage. Personally, they have been unsatisfactory in our hands.

The leukopenic index test, recently developed, offers great possibilities in determining the offending foods in food-sensitive patients.

EVOLUTION OF THE LEUKOPENIC INDEX TEST

The leukopenic index test as a diagnostic method in the study of food allergy was developed in 1933, by Warren T. Vaughan, [1,2]. The procedure was an outgrowth of the so-called colloidoclastic test for liver function, introduced in 1920 by Widal, Abrami and Iancovesco. In the original liver function test, the patient first had a total leukocyte count and then received a glass of milk. Subsequently, the leukocytes were counted at 20-minute intervals. An occurring leukopenia was considered as pathologic and evidence of hepatic insufficiency. Vaughan observed that many of the patients undergoing the liver function test were allergic. He, therefore, deducted that this test was not a test for hepatic insufficiency but indicated a food sensitivity.

Other workers, such as Gay[3], Rinkel[4], Zeller[5], Squier[6], Bowen and Balyeat, have made intensive study of the diagnostic value of the leukopenic index in cases suffering from food allergy and believe it is a procedure of great value. Much credit is due Vaughan, Gay and Rinkel for our present method of making the leukopenic index test and its interpretation.

Early as 1891, it was observed that the leukocytes would vary in relation to the

*Read before the Section on General Medicine, Annual Meeting, Oklahoma State Medical Association, Tulsa, May 11, 1937.

food intake[7]. Later, Adelsberger[8] showed that the kind of food ingested determined the leukocyte reaction.

Technique of the Leukopenic Index Test

The following points should be considered in making the test:

1. At least five hours should elapse after eating, before the patient is tested. Preferably, leukopenic index studies should be done in the morning, the patient reporting to the office in a fasting state at 8:30.

2. Two fasting WBC counts are made at ten-minute intervals, and a mean of the two counts is taken; this count is considered the base.

3. The food to be tested is then given to the patient in moderate quantities and should be as palatable as possible. The patient should be comfortably seated and asked to pass the time away by reading or visiting with friends, relatives, or patients. During the period of the test, smoking, going to the lavatory, walking about the halls, etc., should be forbidden.

4. Following the test meal, three additional counts are taken at 20-minute intervals. Then, a fourth count is made 30 minutes later. The same blood pipette and counting chamber should be used, and the same technician should make the counts.

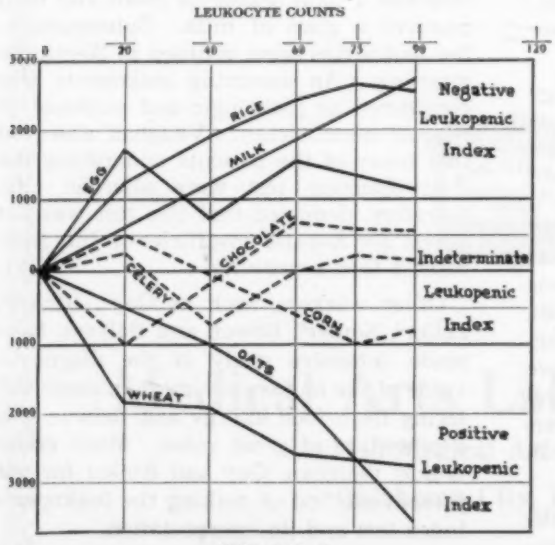

FIG. NO. 1
Illustrating the positive, negative, and indeterminate leukopenic index curves.

5. Observations concerning nasal itching, sneezing, rhinorrhea, nasal blockage, headache, coughing, wheezing, local or general pruritus, gastro-intestinal symptoms, etc., which might occur during the period of the test should be recorded.

6. The series of counts should be graphically charted.

Interpretation of the Test

From a clinical standpoint, there are usually three distinct types of curves obtained, as has been suggested by Rinkel[9].

1. *Negative Leukopenic Index*: This is recognized by a post-ingestive increase of leukocytes of at least 1,000 cells, and the counts continue to be definitely greater than the basic count for at least one hour.

2. *Positive Leukopenic Index*: A post-ingestive decrease of 1,000 cells or more, and the counts continue to be definitely less than the basic count for one hour.

3. *Indeterminate Leukopenic Index*: A change of less than 1,000 cells either above or below the basic count.

It has been pointed out by Vaughan[10] and it has been our experience that the higher the fasting white counts, the more likely is there to be a wider fluctuation in the post-ingestive counts. It is possible, therefore, that the required drop should vary, depending on the original fasting count. We would suggest that a drop or increase of 1,000 should be required if the fasting count is from 5,000 to 10,000, while a drop or increase of 2,000 should be required if the fasting count is from 10,000 to 16,000.

Case Reports

I wish to briefly discuss a number of cases of various types of allergic diseases, as a means of demonstrating the value of the leukopenic index as a diagnostic method in the study of food allergy.

Eczema and Asthma

Case 1.—C. T. M., female, aged 39, was first seen eight years ago, complaining of seasonal hay fever, asthma, and eczema. Her asthma, hay fever, and eczema all occurred about the same time. Eczema symptoms, at the time seen by us, were severe.

Allergic studies revealed marked reactions to pollen, the animal dander group, and to the following foods:

Whole wheat	+ + +	Soy bean	+ + + +
Wheat proteose	+ +	Lima bean	+ + +
Wheat globulin	+ +	Buckwheat	+ +

There was some reaction to a number of other foods. Desensitization was done to the inhalants. Wheat and a number of other foods were taken out of the diet. In a reasonable length of time, she became free from her eczema and also symptoms referable to the respiratory tract. We began to add foods, one at a time, and found we were able to add all except wheat. During the past eight years, wheat and wheat products have been entirely out of her diet. She still shows large intradermal reactions to this food. She has reported to us that the smallest quantities of wheat, which she would occasionally get in her diet, would cause itching skin, itching of the mucous membrane of the nose, and tightness in her chest.

For the purpose of demonstrating the leukopenic index in a patient who is highly skin sensitive and also clinically sensitive to a food, this patient was kind enough to let us give her a test meal of crackers and study the blood before and after the ingestion of the wheat product.

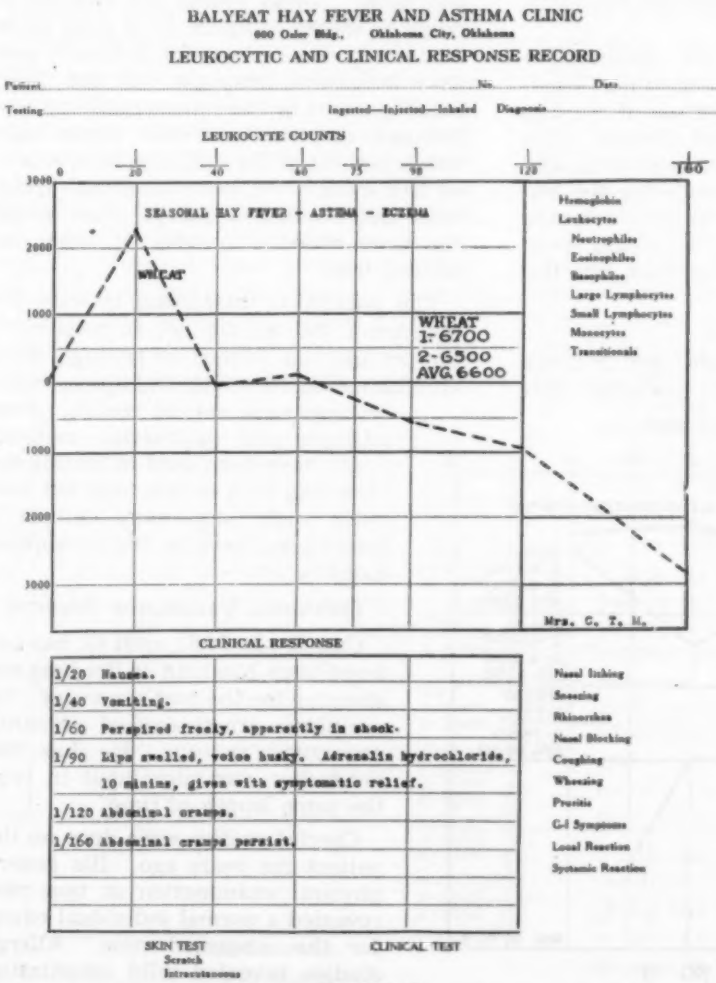

FIG. NO. II

Unusual curve to wheat. Considering the ninety-minute and two-hour post-ingestive leukocyte drop and the clinical response, the curve must be called very strongly positive.

It is interesting to note that the 20-minute post-ingestive count was more than 2,000 above the base line. This can be accounted for by the severe nausea and vomiting which occurred at that time. The two-hour count was nearly 3,000 below the base line. While the three small crackers were being eaten, the tongue and lips smarted like she had taken pepper. Twenty minutes later she had symptoms of nausea. This continued for another 20 minutes, at which time she vomited. About one hour following the ingestion of the crackers, she perspired very freely, similar to one in shock. A little later,

her lips swelled, her voice became husky, and there was tightness in the chest. Ten minims of adrenalin hydrochloride had to be given for relief. Previous to the giving of adrenalin, she also complained of crampy pains in the abdomen. These crampy pains continued for several hours.

In this case, the leukopenic index curve is definitely positive. Clinical response symptoms referable to the skin, respiratory system, and gastrointestinal tract developed following the ingestion of the test meal. Clinical response symptoms may occur in a patient whose leukopenic index curve falls in the indeterminate class. However, under such conditions the curve should be called positive.

Many patients who are sensitive to foods will automatically lose their sensitivity when the food is left out of the diet over a considerable period of time. This is not true, however, of many patients who are highly sensitive. Considering the leukopenic index and the clinical response symptoms in this case, it would seem foolish to try to put wheat back into this patient's diet.

Migraine

Case 2.—H. W. H., female, aged 28 years, has suffered from periodic headaches since childhood. During the past eight years, she has also suffered from indefinite gastric symptoms and hives. Her headaches have been, and were at the time of our examination, associated with evidence of cortical irritation and, therefore, are of the true migraine type.

Intradermal method of testing revealed the following findings:

Wheat	0	Milk	0
Egg	+	Cheese	+ + +
		Cocoa	+ + +

There were a number of other foods to which she was moderately positive. Leukopenic indices were done on wheat, egg, and milk. These counts are charted in graph as shown in figure 3. Of these three foods, only wheat showed a definitely positive leukopenic response Of the foods found positive by the intradermal and leukocyptic response methods, wheat only was taken out of the diet. She has remained free from hives, gastrointestinal symptoms and headaches, except when wheat has been added a number of times for clinical trial.

The patient is interesting because the leukopenic indices did not correspond to the intradermal method of testing. Food elimination based on the leukopenic index findings gave desired results. Food addition and subtraction methods might have been used in finding the offending food in this case, but how much easier and more definite a method we have in the leukopenic index.

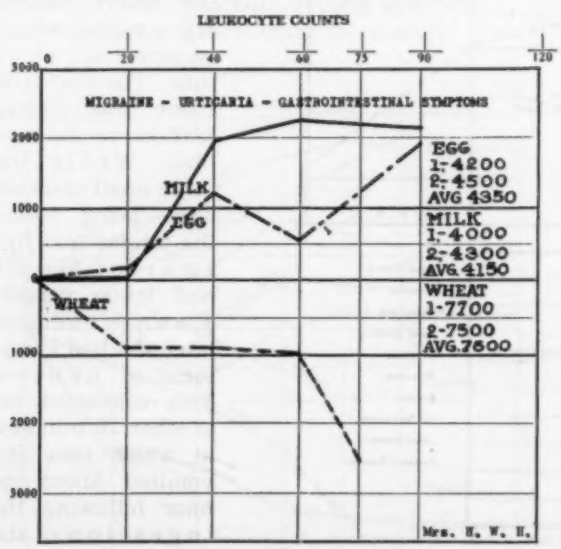

FIG. NO. III

Leukopenic index curves for wheat, egg, and milk. Note the definitely negative curves for egg and milk. Observe the strikingly positive curve for wheat.

Perennial Vasomotor Rhinitis

Case 3.—R. B. J., aged 43, has suffered from blocking of the nose and sneezing for the past ten years. His symptoms are typical of perennial vasomotor rhinitis. He has had headaches, non-migrainous in type, the same length of time.

Careful studies were done on this patient six years ago. His general physical examination at that time revealed a normal individual except for the congested nose. Allergic studies revealed mild sensitization to some of the pollen, animal dander, and also to food, but none of the reactions were very definite. At

that time we started desensitization, using house dust and the ragweeds. This man has been rechecked a number of times during the last six years because results have been poor, in spite of the fact that he has been a very cooperative patient. At no time have we found any indication of infected paranasal sinuses. Nasal secretions repeatedly have shown a predominance of eosinophils.

Recently a leukopenic index was done on the following foods: corn, wheat, milk, potato, egg, and wheat repeated. Of these foods, as shown in figure 4, wheat is definitely positive, and wheat shows a definitely positive curve when repeated, but the other foods give a definitely negative leukopenic index.

He has been on a rather restricted diet, since by repeated testing, by intradermal method, a number of foods have been found slightly positive. At no time during the past six years has wheat been definitely positive by the scratch or intradermal method of testing. After finding the leukopenic index to wheat strongly positive, his diet has been rearranged in such a manner that wheat and wheat products, even to the 'nth degree, are out. A few other foods, such as chocolate, shell sea foods, watermelon, and cantaloupe, have been taken out of his diet on general principles, but they had been out before.

Within 24 hours after removing wheat from his diet, his nose changed from a completely blocked one, as it stayed that way most of the time, to one fairly normal, and the chronic frontal and facial headache, from which he suffered most of the time, disappeared. He has remained free except for one time when he had a number of slices of rye bread. (He is not sensitive to rye, but rye bread containe 20 per cent wheat.) A couple of hours after eating the bread, he developed nasal symptoms the same as before, but he was free 12 hours later and is now remaining completely free from nasal symptoms.

This man has found that he can be relieved of his nasal symptoms on a wheat-free diet and will develop symptoms again on ingesting wheat. For six years, by careful testing, retesting, food elimination and addition, we were unable to give this man relief from his nasal symptoms. A test to wheat by the leukopenic index method and a repeat proved strongly positive. It is our custom, on obtaining a positive leukopenic index, to repeat the test. By the leukopenic index studies, we found the offending food. We feel that the procedure, although time-consuming, is of great value in the study of perennial vasomotor rhinitis.

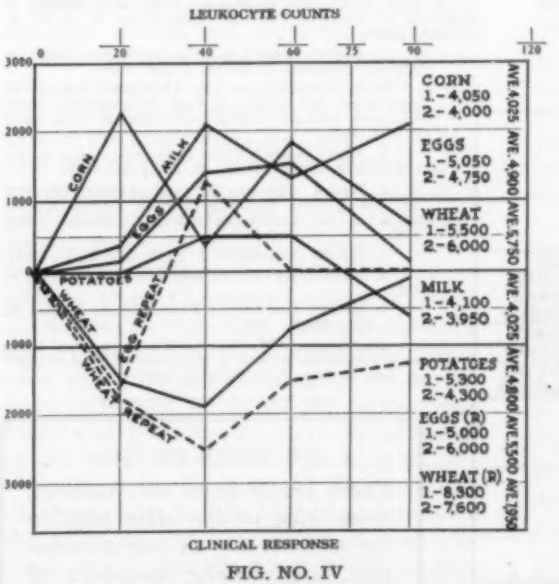

FIG. NO. IV

Showing leukopenic index curves for a number of foods. Note wheat and wheat-repeat definitely positive. All other foods are definitely negative.

Bronchial Asthma

Case 4.—A. S. J., female, aged 52, had been a perennial asthmatic sufferer for the past 15 years. Her asthma was very severe, and when first seen by us she had used adrenalin to the extent that she was adrenalin-fast. She was hospitalized, and ether and oil were used per rectum for a number of days, and then adrenalin again gave her relief.

Allergic studies showed marked reactions to the animal dander group and to pollen, but there were a few foods to which she also showed definite reactions, and they are the following:

Wheat	+ + + +	Rye	+ + +
Barley	+ + + +	Milk	+ +

There were a number of other foods to which she showed a moderate reaction. On account of the large reaction to wheat and a definitely positive leukopenic index to wheat, as shown in figure 5, we quizzed her carefully concerning the possibility of the ingestion of wheat as an etiologic factor in her asthma. She said she could not detect that the eating of wheat would cause asthmatic symptoms, but she told us, however, that for many years she had been unable to do any kind of baking on account of the effect flour had when inhaled.

In outlining her treatment, desensitization was done with the dust group and the ragweeds. Wheat was taken entirely out of her diet. She became free from asthma rather quickly, making us feel that although her marked sensitization to the ragweeds and to the dust group had much to do with her asthma, yet the ingestion of wheat played a definite secondary part. We have observed this patient over a period of only about three months. She is doing exceedingly well.

It is possible for patients to be sensitive to the dust of a food, such as wheat in this case, and have difficulty on inhalation, but the same food by ingestion would not cause trouble; this we have seen a number of times. In this case, however, we feel quite sure that wheat has played a definite part in the cause of her trouble, both by inhalation and ingestion. Knowing what we do about the importance of the inhalants in the adult, we would consider house dust and the ragweeds as the primary factors and the wheat secondary.

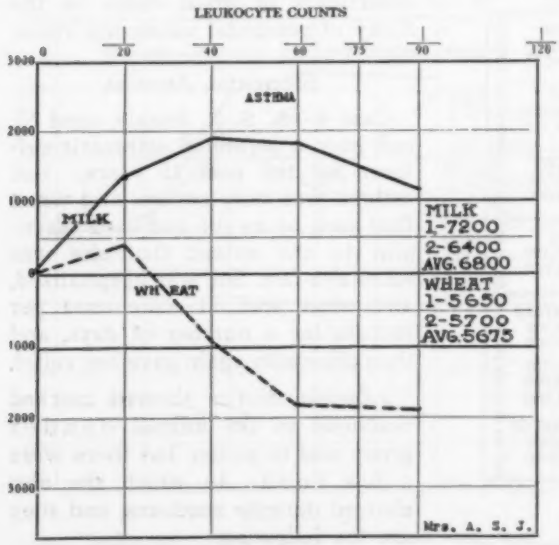

FIG. NO. V
A definitely positive leukopenic index to wheat.

Conclusion

In our study of food-sensitive patients during the last year, the leukopenic index has been done over 2,000 times. It has always been done in conjunction with the scratch and intradermal methods of testing. We feel sure that when one decides on food elimination, both the skin test and the lepkopenic index should be taken into consideration. The study of food sensitization by the leukopenic index method is a time-consuming procedure. In spite of this fact, however, it is an added adjunct in our diagnostic armamentarium in allergic diseases that is of great value. It is often the only method by which we are able to find the offending food.

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There are at least two hundred more men in the state eligible for membership in our Association. Let's make members of them during 1938.

Intestinal Obstruction*

FREDERICK CHRISTOPHER, B.S., M.D.
Associate Professor of Surgery, Northwestern University Medical School; Chief Surgeon Evanston (Ill.) Hospital

Progress in medical care falls into two great divisions. The first deals with the discovery of new principles, new diagnostic and remedial agents. The second deals with the dissemination and application of these discoveries. The operative mortality of intestinal obstruction today is virtually unchanged as compared to that of forty years ago and remains at the appallingly high figure of about 45 per cent.[9] Of recent years the splendid studies of Wangensteen, Orr, Gatch, McIver, Ochsner, and many others have added to our knowledge of this subject and have enabled these men to obtain lower mortality figures. The problem is a difficult one and much remains to be done. None the less it is of benefit to all of us periodically to examine the present status of our knowledge of intestinal obstruction and see wherein we can improve results.

Recently Wangensteen[1] in summarizing his own studies and those of others has pointed out some considerations which are of importance to any approach to the problem of intestinal obstruction. In obstruction of the small intestines sixty-eight per cent of the gas is accounted for by swallowed air; twenty-two per cent originates by diffusion from the blood into the bowel lumen; and only about 9.5 per cent arises from the putrefactive activity of the intestinal tract. Obstructed bowel is shortened and its bursting strength is only about one-half normal. Wangensteen measured the intra-enteric pressure in actual cases of human intestinal obstruction and found it to be from four to 14 cm. of water in the small bowel, and from 12 to 52 cm. of water in the large bowel. The ileocecal valve accounts for the higher pressures in the colon, as gas can be forced from the small bowel into the colon but it usually cannot return. Thus colonic obstructions virtually become closed loop obstructions, a circumstance which has an important clinical bearing.

Formerly the absorption of toxic products was thought to be an important factor; today this factor is regarded as negligible. The blood of animals in the terminal stage of intestinal obstruction is harmless for transfusion. Moreover, "Every available evidence points toward a diminution of mesenteric venous absorption with increased intra-enteric pressure." (Wangensteen). As long as the bowel is viable absorption does not occur. Sustained pressure in the bowel may, however, cause patches of necrosis in the wall. In animals a sustained pressure of 20 cm. of water over 28 to 32 hours will cause necrotic patches. Pressures of 40 cm. of water caused necrosis in 11 hours, and with a pressure of 100 mm. of mercury transperitoneal diffusion may occur in three hours.

Occlusion of the veins of the bowel brings about a considerable blood loss in the wall and into the lumen of the bowel. Experimentally if the veins alone of a segment of bowel three to four feet long are tied, enough blood may be lost in four or five hours to cause shock or even death.

Wangensteen calls attention to the foregoing considerations to emphasize that it is *mechanical* rather than the toxic factors which are of importance in the development of a serious situation in intestinal obstruction. The highly important physiologic considerations of intestinal obstruction are (1) loss of fluids by vomiting, (2) loss of blood in the lumen of the bowel, and (3) the loss of mineral salts (electrolytes).

A wide variety of pathologic conditions may bring about an intestinal obstruction. The commoner causes include congenital atresia, imperforate anus, benign and malignant tumors of the bowel, adhesions and

*Read before the Oklahoma City Clinical Society at its Eighth Annual Fall Clinical Conference, November 3, 1937.

adhesive bands, obturation of the bowel by gall-stones, feces, etc., external compression by tumors or abscesses, external hernia, internal hernia, volvulus, intussusception, Meckel's diverticulum, nervous imbalance of the bowel (either paralytic or spastic), and mesenteric thrombosis and embolism.

The *early diagnosis* of intestinal obstruction is of greatest importance in the successful treatment of this disease. The mortality increases rapidly with delay of diagnosis and the institution of proper treatment. Even a few hours may spell the difference between recovery and disaster. A few extra hours of high sustained intraluminal pressure may bring about necrosis of a patch of the bowel wall with an insuperable peritonitis. It is highly important that the physician's mind be alert to the recognition of the earliest symptoms and other diagnostic guides of intestinal obstruction. The first symptoms which indicate some type of intestinal obstruction are the important ones. Later symptoms or laboratory aids merely help in differentiating the etiology and type of the obstruction.

By far and away the most important single symptom of intestinal obstruction is *pain*. The pain is usually sudden in onset and has a cramp-like character. It is due to distention of the bowel in its usually futile efforts to force gas past the obstruction. Its intermittent, paroxysmal, recurrent nature is characteristic. The patient will often call attention to his awareness that the pain is beginning. It may then rise to such a crescendo of severity as to make the victim twist about in helpless agony. He will break out in a cold sweat and may even go into collapse. The attacks of pain come at variable intervals, as three to 15 minutes, and may be sustained for several minutes. Usually the pain is referred each time to the same location in the abdomen in contrast to the pain of an acute enteritis, which is usually variable. When the small intestine is involved the pain is usually at the umbilicus or just above; when the colon is the site of the obstruction the pain is in the hypogastric region or it may be well localized at the lesion itself. Intestinal colic may, of course, be found in other afflictions than intestinal obstruction.

Vomiting is of next importance to pain as a symptom of intestinal obstruction. The higher the obstruction the more frequent and more copious is the vomiting. The greatest vomiting is in high jejuninal obstructions. Lower in the alimentary tract vomiting becomes less of a feature and may be absent entirely in obstructions of the left colon. The first vomitus is gastric mucous, to which soon is added bile and enteric secretion. In advanced cases the vomitus may have actually a fecal character. The diagnosis of intestinal obstruction should be made long before the appearance of fecal vomiting.

A history of previous operation or operations is of great importance in suggesting the diagnosis of intestinal obstruction if intermittent pain and vomiting are also present. Probably the peritoneal cavity is never opened and closed without the formation of adhesions of the peritoneal surfaces. To a large extent the degree of these adhesions is dependent upon the gentleness of the surgeon and his technique of covering raw surfaces and of closing the peritoneum. In cases in which adhesions seem most prone to develop the writer feels that amniotic fluid[2] has a definite value in their prevention. Pelvic operations are a common cause of the formation of pernicious adhesions although appendectomies, being so common, are perhaps more frequent offenders. The "fiddle-string" type of adhesion is the most dangerous. Adhesions of this type may develop and be present for years before they may cause an incarceration of the bowel and resultant intestinal obstruction. It is to be remembered that adhesive bands and strings capable of causing intestinal obstruction may be present in the peritoneal cavity without a previous operation having been performed. A previous abdominal injury may be an etiological factor in some cases of peritoneal adhesions. Previous milder attacks of cramp-like periodic pain and vomiting suggest partial intestinal obstructions which recovered spontaneously. In cases of previous operation in which it can be learned that there was peritonitis, and particularly where drainage was

necessary, is the formation of adhesions to be suspected.

There are other points in the history which may have a bearing on the diagnosis of intestinal obstruction. Increasing constipation or complete absence of bowel movements suggests an obstructing lesion, usually a carcinoma, in the sigmoid flexure of the colon. Blood may have been observed in the stools in intussusception or in carcinoma. Marked loss of weight suggests malignancy in the region of the ileocecal obstruction. The patient may give a history of a previously readily reducible external hernia which may now be irreducible. History of gall-stones or jaundice may indicate the possibility of obstruction by obturation of a gall-stone. Patients who have been known to have suffered from vegetative endocarditis may be suspected of having a mesenteric thrombosis or embolism. New borns with vomiting or distention must be investigated for congenital atresia of the bowel or imperforate anus.

The physical examination often yields important evidence and must be carried out with great care. Of first importance in patients with periodic cramp-like pain and vomiting is the ausculation of the borborygmi of hyperperistalsis coincident with the acme of the pain. These are loud whirring, gurgling noises which are best heard with the stethoscope when the patient's pain is most severe. The character of these sounds changes with the progress of the disease, and they are finally silent in the advanced stages of the disease.

Distention of the abdomen may be entirely absent in any type of early obstruction. In high jejuninal obstructions it may be unimportant in amount through the course of the disease, particularly if the stomach is kept empty by aspiration. As the usual obstruction becomes older the distention of the abdomen becomes increasingly evident until it may be very marked indeed. This is specially true in small bowel obstructions. In obstructions limited to the colon with a functioning ileocecal valve, the colon alone may be distended and the small bowel be virtually normal.

Palpation of the abdomen may give very valuable information. In simple obstructions where there is no compromise of the blood supply, tenderness and rigidity may be slight or absent unless the bowel is so distended that there is weeping from its surface. When the bowel is obstructed in such a manner that its blood supply is impaired and the bowel is strangulated, serosanguineous fluid is produced in the peritoneal cavity. This fluid causes or is accompanied by an irritation of the peritoneum. Irritation of the peritoneum in turn causes it to be sensitive; palpation is painful and rebound tenderness is readily elicited. Some rigidity may be present. The finding of rebound tenderness and sensitive peritoneum, then is of great importance, as it would indicate a strangulation of bowel demanding immediate operation, whereas the absence of rebound tenderness and sensitivity may authorize delay in surgical exploration. Often the surgeon may be in doubt as to the presence or absence of strangulation and then operation will have to be carried out.

Visible peristalsis may be present in chronic obstructions where the bowel wall has hypertrophied in response to long-standing back pressure. It is very uncommon in early intestinal obstruction. Precussion of distended abdomens will of course give a tympanitic note. In some cases, as intussusception, tumors at the ileocecal valve, volvulus, pelvic abscesses, etc., a mass may be palpated. There may be visible explanation of the obstruction, such as strangulated external hernia, an imperforate anus, etc. In advanced cases of intestinal obstruction the intra-lumenal blood loss may be so great as to cause shock.

In all cases of suspected intestinal obstruction an X-ray examination should be made. The patient is placed prone or supine on the X-ray table and a film is made without contrast medium ("scout film," "flat plates"). Except under three years of age, gas is normally absent from the small bowel. Experimentally in dogs gas will appear in from three to three and one-half hours after the obstruction.[3] The finding of gas in the colon and relatively little in the small bowel indicates a left colon obstruction with a functioning ileocecal valve. If there is gas in both large and small bowel the

obstruction is in the former. It is usually possible to identify the colon in the film as well as to differentiate between the jejunum and the ileum. The finding of a pneumoperitoneum with the film made in the lateral or vertical position indicates that gas has escaped from the bowel into the free peritoneal cavity. The vertical film in intestinal obstruction may show numerous fluid levels, but the horizontal films are most useful in diagnosis. In colonic and rectal obstructions a barium enema may be given, and often will give a very conclusive picture of the carcinoma. A safe working rule is never to give barium by mouth in any case of intestinal obstruction. Wagensteen has shown the value of a vertical film of an inverted new born baby in cases of imperforate anus. The bubble of gas in the infant's colon will seek the highest level and thus differentiate between an imperforate anus and a rectal atresia.

In early cases of intestinal obstruction the pulse, respiration, temperature, and blood-pressure are usually unchanged. In the more advanced cases dehydration may bring about an increase in the red blood count and hemoglobin. The leucocyte count has little significance in early cases, but is high in late cases. High obstructions which have existed for 48 hours show a decrease of the blood chlorides from the persistent vomiting. Increased combining power of the blood for carbon dioxide and elevation of the non-protein nitrogen are often found.

In intestinal obstruction enemas are generally useless and may be deceptive. *Bowel movements, either with or without enemas, may occur from the section of bowel below an acute complete intestinal obstruction.* When this section is emptied no further feces or gas will be passed, but the diagnosis should have been made before that time. Morphine may mask the symptoms and it is inadvisable to give it.

Once the diagnosis of intestinal obstruction seems fairly certain, an effort should be made to ascertain what particular type of obstruction is present. In new born infants having attacks of upper abdominal pain, nausea, and bile-stained vomitus congenital atresia of the duodenum may be suspected and may usually be confirmed by X-ray examination. In new borns with imperforate anus there is vomiting and abdominal distention and the X-ray will distinguish between mere imperforate anus and atresia of the rectum.

In young infants pyloric stenosis will be accompanied by visible peristalsis of the stomach. Where there is intermittent pain, vomiting, blood-tinged mucus in the rectum or passed by rectum, and a palpable abdominal tumor, intussusception may be expected. In these cases rebound tenderness may be absent. A visible and palpable external hernia is a self-evident cause of obstruction.

In adults with laparotomy scars presenting the symptoms of intestinal obstruction the cause is usually bands of adhesions. Where there is distention and vomiting but pain is relatively inconspicuous the condition is usually a "paralytic" ileus. In adults without laparotomy scars and having symptoms of acute obstruction the cause may be incarcerated or strangulated external hernia, incarcerated internal hernia, intussusception, malignancy, adhesive bands, or obturation of the bowel due to gall-stones. In volvulus there may be a distinctly recognizable elastic distended coil of bowel in the region of the sigmoid flexure of the colon or at the cecum. In mesenteric thrombosis and embolism the symptoms of abdominal pain, vomiting, and occasionally diarrhoea are of slow development, often taking a week before the symptoms demand serious consideration. In obstructions of the colon, vomiting may be absent. Where the attacks of intestinal colic are chronic or repeatedly subacute and are accompanied by visible peristalsis, and loss of weight, acquired strictures are usually the cause. If there is blood in the stool these are generally carcinoma, and if blood is absent they are inflammatory.

Careful consideration of the variations of the general picture of intestinal obstruction will often give valuable indications as to the specific type of obstruction, its degree, and situation, and will furnish us with valuable guidance for therapy. It is valuable to remember, as stated by Orr[6], that "the nearer the obstruction is to the pylorus, the more rapidly symptoms will develop and the more promptly death will

ensue if the obstruction is not relieved." Sometimes the clinical problem is difficult indeed. One of the most difficult is, as Wangensteen says, the differential diagnosis between a strangulated obstruction and an inflammatory lesion complicated by a simple obstruction.

TREATMENT OF INTESTINAL OBSTRUCTION

All well developed cases of intestinal obstruction are dehydrated and will demand replacement of fluid before operation. For this purpose para-oral administration of saline solution is indicated and should be given in sufficient quantity to produce a daily urinary output of 700 to 1500 c.c. In high jejunal obstructions saline solution acts like a specific in the relief of symptoms. In all cases of strangulation of the bowel where a considerable loss of blood in the bowel is pre-supposed, blood transfusions are strongly indicated. Fluid replacement and blood transfusions are of prime importance in the preliminary treatment of intestinal obstruction.

Of parallel importance with fluid replacement and blood transfusions is the relief of the gaseous distention in the bowel. Of recent years Wangensteen has done a great service by emphasizing the value in the treatment of intestinal obstruction of suction applied to an indwelling duodenal tube. Wangensteen[4] has shown that this method may be a satisfactory substitute for operation, particularly in adhesive incomplete occlusions, and in physiologic obstructions. He says "As an auxiliary to surgery, it has proved of value in most obstructions. Its limitations are quite understandable and the employment of suction applied to an inlaying duodenal tube *as the sole remedial agent is strictly contraindicated essentially in two kinds of obstructions* (1) *strangulation obstructions,* (2) *occlusion of the left colon in which the competent proximal ileocolic sphincter limits the distention to the colon.*"[6] When indicated and properly employed this method has inestimable value. The surgeon should be watchful, however, for chloride depletion in prolonged use of the Wangensteen suction apparatus. The essentials of the apparatus are a long catheter, which is passed through the anterior nares, down the oesophagus and into the stomach, and a system of bottles and tubes so arranged as to produce syphon suction of about two and one-half feet of water pressure, and also a trap in a bottle were can be measured all gas aspirated from the stomach or duodenum. The passage of the tube is facilitated by having the patient drink water as the catheter is passed. In some cases suction from the stomach seems to be ample, but where suction from the duodenum is desired a lead tipped catheter is used and the patient lies on his right side and drinks water into an empty stomach. The catheter generally finds its way into the duodenum, where its presence can be proved by X-ray. If it fails to enter the duodenum promptly inhalation of amyl nitrate may encourage its entry. When the catheter tip is in the stomach the patient is permitted to drink water as desired for it is immediately sucked out. This process carried on for several days may lead to a real lowering of the blood chlorides, with danger to the patient.

Patients with intestinal obstruction may conveniently be divided into three classes. The first class, which is a very small group, consists of those on whom an immediate operation is indicated. These patients are in excellent condition and the obstruction will have been recognized within a few hours after its inception. "The only real danger is from deciding that nothing serious is wrong." Morton[7]. In the second class despite the fact that immediate relief of strangulated bowel is demanded, yet the patient's general condition is so poor that supportive measures outweigh the need of immediate operation. These patients have a dry skin and tongue, anxious faces, periods of restlessness, general discomfort, and slightly fecal odor to the vomitus. The non-protein nitrogen will be high and there will be a leucocytosis, and abdominal distention is present, but the pulse and temperature may be normal. A few hours of para-oral saline and dextrose, blood transfusion, Wangensteen suction, and morphine will enable the patient to withstand the necessary surgical procedures with much greater safety. In the third class of patients it may be possible to defer operation indefinitely or even omit it. These are the cases

of "paralytic ileus" in peritonitis and many cases of obstruction by adhesive bands *where there is no strangulation.* It should be emphasized that it may be impossible to exclude the presence of strangulation even in the absence of sensitive peritoneum and rebound tenderness and in that event the surgeon will be obliged to explore the abdomen. Also in this class may be included moribund cases in which operation can not possibly be of benefit.

The choice of anesthesia in operations for intestinal obstruction is of importance. Spinal anesthesia is warmly recommended by many surgeons, but the writer feels that its use is relatively restricted and is definitely contra-indicated in advanced cases. Enterostomy may be done under local anesthesia but general anesthesia is preferable. For general utility ethylene, ether, and cyclopropane are advisable.

The actual surgical procedures will depend on the age and type of obstruction and upon the patient's general condition. In the early case release of the bowel will be all that is necessary. It is usually preferable, in searching for the obstruction, to begin with the collapsed bowel and trace it upward. This may readily be done by cutting the obstructing band or hernial ring. The incarcerated bowel will be carefully observed for 15 to 20 minutes for viability and return of function. During the observation warm moist compresses are applied to it. If the color markedly improves, its peristalsis on stimulation returns, if the serosa is smooth and glistening, and pulsation of the vessels returns, then it will be usually safe to return the bowel to the abdomen. If the distention of the small bowel is not marked enterostomy will be omitted. The presence in the peritoneal cavity of bloody serous effusion indicates a serious strangulation. In some of these strangulations bowel function will recover after as long as ten hours, in others it will fail to recover after as little as three hours.

As Morton[7] points out, gangrenous patches can be merely inverted without resection. Where the bowel is irreparably damaged removal of the damaged segment will be necessary. It is advisable to go well beyond the involved area to escape small thromboses in the adjacent vessels. In the small bowel resection and anastomosis is usually carried out, although in desperate cases the exteriorization operation of Mikulicz will be safer. A lateral anastomosis is less likely to result in stenosis of the bowel, but the end-to-end type, especially where done with a Rankin clamp, is quicker and usually satisfactory. The Mikulicz operation is less suited to the small bowel than the large because of the more irritating character of the enteric discharge in the former. In the large exteriorization is distinctly preferable to anastomosis, which carries much more hazard. In all exteriorization operations the bowel is brought outside the abdomen, sectioning some of the mesentery when necessary, and the peritoneum closed around the two ends. The affected bowel may then be removed. The proximal end may be made to extend three or four inches and sewed over a Paul's tube to give immediate decompression if that be urgent. It is preferable to leave the clamps on the bowel six to 48 hours before opening the proximal clamp. In extremely ill patients it may merely be possible to make a side-tracking anastomosis around the necrotic bowel without removing it. This has been practiced successfully by Montgomery in irreducible intussusceptions.

In operation on strangulated external hernias, unless care is taken to prevent it, the release of the bowel may permit it to slip back into the peritoneal cavity before the surgeon has had an opportunity to satisfy himself as to its viability. This is unfortunate and should be prevented if possible because in this situation the surgeon will be obliged to do a laparotomy to examine the affected bowel.

The indications for enterostomy may be difficult indeed to determine. Unless an enterostomy is performed under meticulously aseptic conditions a disastrous peritonitis may result. Where there is tremendous distention enterostomy is futile because the wall of the bowel opposite to the enterostomy tube will approximate to the latter so strongly as to preclude the passage of gas or fluids through the tube. Enterostomy is practically useless in so-called paralytic ileus. There must be peristalsis in a bowel to make an enterostomy function. In early cases where the obstruc-

tion is released and the motility of the bowel is satisfactory an enterostomy is unnecessary and may be positively harmful. Suction within dwelling catheter may be entirely adequate in the post-operative management of such cases. None the less it is perfectly certain that a properly performed enterostomy has saved many lives under the proper indications. In very ill patients in whom it is poor surgical judgment to make an extended search for the obstruction merely doing an enterostomy (except, perhaps, in cases of marked strangulation) may tide the patient over the crisis until more favorable conditions for further operation are present. Moreover, in some cases of obstruction due to freshly formed post-operative adhesions enterostomy may be all that is necessary and the obstruction will clear up with decompression of the bowel. Where an anastomosis has been necessary and there is marked distension a proximal enterostomy will protect the suture line. The writer prefers the Hendon (mushroom catheter) type of enterostomy to the Witzel type. Stripping of the bowel to remove its contents is always unwise[8].

Trauma should be minimized and raw areas carefully covered as a prophylaxis against adhesion formation. Where it has been absolutely necessary to separate adhesions it is definitely valuable to place 100 c.c to 200 c.c. of amniotic fluid concentrate[2] in the peritoneal cavity before closing.

The post-operative care is of extreme importance after operations for intestinal obstruction. In immediate shock the head will be lowered but the patient will be raised to a semi-sitting position as soon as possible. The Wangensteen suction apparatus will be used at once in all cases and when the patient is conscious he is permitted to drink, keeping a careful watch against chloride depletion. Fluids are given by vein, under the skin, and by rectum in such quantity, usually 3,000 to 4,000 c.c. per day, so as to produce a urinary output of 1,000 to 1,500 c.c. per day. One liter of physiologic saline should be sufficient for the chloride requirements and the balance should be 5 per cent dextrose in distilled water. The blood chloride should be carefully watched. Where the blood chloride determination shows a hypochloremia more sodium chloride is given intravenously in concentrations of 2.5 to 5 per cent until this condition is corrected. If the blood chloride is too high saline should be omitted. Interrupted intravenous injections are preferable to a continuous venoclysis. In strangulation obstructions blood transfusions are particularly indicated.

Efficient external application of heat to the abdomen is comforting and probably increases peristalsis. Drugs purported to stimulate the intestine have little of any value. Morphine is valuable and should be used freely. As Orr[6] points out, oxygen is too little use in the serious case of intestinal obstruction. It should be employed by tent or nasal catheter. Enemas have little value in the post-operative care except to clear the rectum and lower colon. Where an enterostomy has been done it is sometimes advisable to connect the enterostomy tube to the Wangensteen suction apparatus. When normal bowel movements are resumed an enterostomy, if present, is discontinued. The tube may first be clamped and if there are no ill effects the tube is removed or the exposed tip is cut off and allowed to pass down the bowel.

SUMMARY

A knowledge of the pathologic physiology of obstructed bowel is necessary for the understanding of intestinal obstruction. The earliest symptoms are the most important in the recognition of the disease, as the earliest cases are the most successfully treated. Extremely ill patients should not be operated upon until they have been properly prepared. The actual surgery of intestinal obstruction requires the highest judgment, skill and adaptibility. The after-treatment is of vital importance to the successful outcome of the management of intestinal obstruction.

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Experience With the Use of Protamine Insulin*
A Preliminary Report

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In January, 1936, Hagedorn and his coworkers[1] published a summary of their clinical results with the use of protamine insulin developed by them over two years previously. At the same time, Joslin's group[2] published preliminary observations on fifteen patients. Their experiences after a few months led Joslin to designate as the Hagedorn era a new period of improvement in diabetic therapy.[3]

During the Banting era, various modifications to prolong the action of insulin were attempted without being of practical clinical value. Hagedorn found that the addition to insulin of protamine derived from the sperm of a certain species of trout formed a compound which at a pH reaction close to that of blood serum was slowly broken down and absorbed over a period of hours greater than that of unmodified insulin. During the past two years, clinical investigations with protamine insulin have been carried on in many diabetic clinics throughout this country. The original claim of its prolonged action has been substantiated. Addition of small amounts of soluble salts of calcium and zinc were found to improve the physical characteristics and stability of the preparation as well as to prolong the action even into the second and third day after injection.[4, 5] Protamine zinc insulin proved to be the most efficient combination and after many months of clinical trial was made commercially available the forepart of this year.

In June, 1936, we began, at the University Hospital, a three months period of intense investigation of the clinical use of protamine insulin.† Unmodified protamine, calcium protamine and zinc protamine insulins were used. In our experience as well as that of others the protamine zinc insulin was superior in its action.†† Since the close of the three months period, during which 19 patients were carefully studied, additions to the series have been made from the hospitals, out-patient department and my office, bringing the total number to 65. Experience with this group forms the basis for this paper. A more detailed report to be published at a later date is being prepared.

Regulation of the diabetic patient on protamine insulin should not be undertaken unless the physician realizes that definite dietetic management is still an essential in treatment and that the use of regular insulin has not been abandoned. Reasonable cooperation from the patient is an important factor and unless this can be obtained improved control of the disease with protamine insulin need not be expected.

Under the best of circumstances a very small group of cases may be controlled with difficulty and in some instances seemingly better controlled with the use of regular insulin. In about 15 per cent of our series, control as measured by glycosuria not exceeding ten grams in 24 hours and improvement in the fluctuations of blood sugar was difficult to obtain but neither was it obtained with the use of regular insulin alone. We have found with one exception that the patients in this group are under 35 years of age. Increasing experience has shown that seemingly minor changes in their diet and dosage of insulin may result in improvement. Twenty per cent of our patients take from five to twenty-five units of regular insulin in addition to their protamine insulin. Joslin's statistics[6] indicate that in from

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† This investigation with the technical assistance of Fay Shepard and Earl Mulmed was made possible through the Research Fund of the University of Oklahoma Medical School. The Protamine insulin was furnished through the courtesy of the Eli Lilly Laboratories.

†† In the following discussion, unless especially designated, protamine insulin refers to that containing zinc.

sixty-five to seventy per cent of the diabetics, the onset of the disease is in the fifth decade or later. It is in this group, subject to the unfortunate complications of older diabetics, that improved regulation with protamine insulin has been obtained with the least difficulty and almost invariably without the use of unmodified insulin. McBryde has demonstrated that in diabetic management, the younger patients are relatively insulin sensitive and the older ones are relatively insulin resistant. We have found it of value to classify our patients on this basis. Those who are severely insulin sensitive invariably require regular insulin in addition to the protamine insulin to maintain reasonable control. Those who are moderately insulin sensitive may be controlled with protamine insulin but are more likely to show fluctuations in the blood sugar level and to show varying amounts of glycosuria. The insulin resistant group into which a majority of the older diabetics fall may be readily controlled by protamine insulin and less frequently develop hypoglycemia or show glycosuria.

Must the patient be hospitalized for regulation with protamine insulin? Sixteen patients in our group have been regulated without hospitalization. They were selected on the basis of cooperation with dietary instructions, willingness to make four-period urinalysis for sugar in 24 hours and to remain under close observation until regulated. An occasional blood sugar, preferably fasting, and frequent 24-hour quantitative urinalysis for sugar should be made. We now feel that the majority of those who are relatively insulin resistant can be easily regulated in the office or out-patient clinic if such cooperation exists.

In accordance with the suggestion given in early reports,[8] most of our patients have received all of the protamine insulin in one dose before breakfast. It is only in the very occasional patient that a different time of administration seems preferable. If regular insulin is indicated it is also given before breakfast but in a different location. Care must be taken that instructions to the patients be sufficiently detailed to insure proper cleaning of the syringe and uniform suspension of the protamine insulin at the moment of administration. A number of patients have complained of slight soreness, redness and occasionally lumps at the site of injection. These usually disappear in a short time but may last from 12 to 24 hours. None of our patients have shown insulin sensitivity of any appreciable degree. In some, relief from the mild discomfort has been obtained by transferring the site of injection from the thigh to the subcutaneous tissue of the arm or abdomen. At present, there appears to be no satisfactory method of accurately estimating the dosage necessary for the individual patient. If good control has been obtained with unmodified insulin, the amount of protamine insulin required is usually less. If this has not been the case, the required dosage may be greater. The average of the total decrease in units was about 25 per cent in our group. Small doses of regular insulin each morning for a few days will decrease the glycosuria incident with the transfer to protamine insulin. It is important that too frequent changes in insulin be avoided since its efficiency may not be established for three days or more.

The use of longer acting insulin by no means insures control of the diabetes in a patient on a hap-hazard dietary management. If such a patient will not reasonably follow a definite regime, one should hesitate to advise the use of the longer acting insulin. Our diets have averaged 175 Gms. of Carbohydrate, 74 Gms. of Protein and 92 Gms. of fat. The Carbohydrate has varied from 100 to 250 Gms. As a rule, it has been partitioned between the three meals in the ratio of 1/5, 2/5, 2/5 according to the suggestion of Sprague.[8] After short experience, it became a rule to give a bedtime lunch of foods from which carbohydrate is slowly liberated, such as milk, bread, meat or cheese. In many patients, especially of the insulin sensitive group, individual rearrangements of the diet have aided in establishing control.

Although insulin reactions occur more frequently with the use of regular insulin, their occurrence with the use of protamine insulin is sufficiently frequent to deserve special emphasis. In the detailed study of 19 patients during which four daily blood sugars were made for many consecutive days on each patient, approximately five

per cent of the readings were below 70 mgm. per cent after instituting the use of protamine insulin. Most of the low-readings were on the fasting blood specimens. The majority of the patients in this entire series have had reactions at some time since transferring to protamine insulin. They occur most frequently late in the afternoon or before breakfast the following morning. Since the onset is slower, the symptoms are less abrupt and with many patients less easily recognized. Headache, nausea and an unpleasant disposition are common symptoms, which are rarely found in hypoglycemia produced by regular insulin. Also there may be drowsiness, restlessness, paresthesia of the extremities, sweating and hunger. Four of our patients have had reactions of such severity as to produce unconsciousness. Two of them were diabetics of years standing who had experienced hypoglycemia numerous times under management with regular insulin but after having been placed on protamine therapy failed to recognize the symptoms even though the difference had been explained previously.

Exercise as a factor contributing to hypoglycemic reactions is important and according to some of the patients seems more likely to precipitate a reaction than when they were using regular insulin. In the insulin resistant group in which the incidence of reactions is lower, exercise was almost invariably the precipitating cause. Reactions may best be prevented by establishment of a bedtime feeding, insisting upon extra carbohydrate before or after unusual exercise and avoidance of overdosage in an attempt to control daytime glycosuria which might better be done by alteration of diet or administration of small amounts of regular insulin.

CONCLUSIONS

1. In the majority of the 65 patients with whom we have used the protamine insulin alone or in conjunction with regular insulin, the diabetic control as measured by glycosuria and fluctuations in the blood sugar level has been definitely improved.

2. Almost without exception the patients have an improved sense of well-being.

3. The use of protamine insulin is much more convenient from the stndpoint of the patient's management of his disease.

4. Insulin reactions are not infrequent and are sufficiently severe to warrant special measures in an effort to prevent them.

5. At the present time the use of protamine insulin does not entirely supplant the use of regular insulin in all diabetics.

6. It has been found to be of practical value from the standpoint of protamine insulin therapy to classify patients as severely insulin sensitive, moderately insulin sensitive and relatively insulin resistant.

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"Stone Walls Do Not a Prison Make Nor Iron Bars a Cage."

Winter is a jailer who shuts us all in from the fullest vitamin D value of sunlight. The baby becomes virtually a prisoner, in several senses: First of all, meteorologic observations prove that winter sunshine in most sections of the country averages ten to 50 per cent less than summer sunshine. Secondly, the quality of the available sunshine is inferior due to the shorter distance of the sun from the earth altering the angle of the sun's rays. Again, the hour of the day has an important bearing: At 8:30 a. m. there is an average loss of over ten per cent, and at 3:30 p. m., over 21 per cent.

Furthermore, at this season, the mother is likely to bundle her baby to keep it warm, shutting out the sun from Baby's skin; and in turning the carriage away from the wind, she may also turn the child's face away from the sun.

Moreover, as Dr. Alfred F. Hess has pointed out, "it has never been determined whether the skin of individuals varies in its content of ergosterol" (synthesized by the sun's rays into vitamin D) "or, again, whether this factor is equally distributed throughout the surface of the body."

While neither Mead's Oleum Percomorphum nor Mead's Cod Liver Oil Fortified With Percomorph Liver Oil constitutes a substitute for sunshine, they do offer an effective, controllable supplement especially important because the only natural foodstuff that contains appreciable quantities of vitamin D is egg-yolk. Unlike winter sunshine, the vitamin D value of Mead's anti-ricketic products does not vary from day to day or from hour to hour.

Diabetes and Heart Disease*

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To the physicians who are interested in internal medicine there are several important problems that frequently arise in connection with heart disease and diabetes. I will first enumerate these problems, and shall then briefly discuss each one separately.

First. Since diabetes is one of the most frequent associations of arteriosclerosis, does it have any effect on the production of any types of heart disease? If so, what are these types?

Second. Are there any methods of treatment of diabetic cases that will prevent arteriosclerotic changes, and the resultant heart changes?

Third. In the two diseases, each complicating the other, in a general way what should be our treatment, and in what conditions are diabetic treatments dangerous to the patient?

Fourth. Are there any points of similarity in the diagnosis of these two separate diseases that might cause confusion in their differentiation?

Fifth. From the experience gained from our former treatments of diabetes may we deductively assume protamine insulin to have any better effect on arteriosclerotic heart conditions?

Heart disease in diabetes is largely limited in the heart to arteriosclerotic changes and to hypertension. Death seems to occur in these cases most often from coronary occlusion. Rheumatic fever and syphilis seem to be minor factors in the development of cardiovascular disease in diabetics. It is well known that diabetes and the arteriosclerotic symptoms of heart disease occur most frequently at the same age of life—between fifty and sixty years. A large number of diabetics, especially the mild cases occurring in elderly individuals, develop coronary artery disease and hypertension. This has become more evident now that insulin products prevent early death, and allow the diabetic patient to live long enough for him to develop vascular changes. In other words, there is uncertainty at the present time that diabetes is the cause of angina; for the patients dying from angina pectoris are practically the same age as those with diabetes who die from angina pectoris. It is thought however, that mild diabetic patients who have been kept on diet alone without the use of insulin and have developed arteriosclerosis, are prone to develop anginal symptoms. Friedman in 1935, in a series of 120 cases of diabetes above the age of 39, found that arteriosclerosis was demonstrable in the aorta in 75 per cent; and that 60 per cent of these had aortic dilatation. Also, the heart was enlarged in 47 per cent. Hypertension was present in 56 per cent. Rabinowitch in the same year found, in a series of 500 diabetics, that 62 per cent had cardiovascular disease.

Degeneration of the heart muscle itself, apart from coronary disease, has been noted by several observers. At autopsies of cases dying in diabetic coma, it has been noted that the heart muscle is pale, cloudy, and swollen. Consequently, the deduction from these reports leads one to believe that arteriosclerotic changes have frequently been caused by diabetes, and these changes insofar as the heart is concerned are hypertensive heart disease, coronary disease, and toxic myocarditis.

The non-diabetic can take protein, fat, and carbohydrate without much apparent damage to his body; but in the diabetic it is felt that protein favors rather than prevents the onset of arteriosclerosis. Consequently, the usual diet rarely exceeds one gram of protein per kilo of body weight. Carbohydrate in a diabetic, if used in such excess as to cause an obesity, may be a

*Read before the Medical Section of the Oklahoma County Medical Society, May 25, 1937.

factor in the development of arteriosclerosis. Excess of fat and cholesterol most certainly seems to favor this condition, and an acidosis over a period of time is also classed as a factor. From the experiences of various investigators, especially with diabetic children, conclusions are rather general that excess cholesterol in the blood seems to be a very important causative factor in the production and development of arteriosclerotic changes. Cecil states that after the third decade of life we see arteriosclerosis with increasing frequency in our diabetics, and that in the middle aged and elderly it is found with great uniformity. The arterial disease however, is often most marked in the mildest cases and many times absent or negligible in the severe forms. Dr. Joslin has pointed out that the uncontrolled diabetic has high blood cholesterol; and that the controlled diabetic runs a more nearly normal one. He has also demonstrated that a higher carbohydrate, low fat diet, in contradistinction to our former high fat diet, shows less arteriosclerosis in our diabetics. In 1935, Rabinowitch reported from investigation and data obtained from other observers, that high carbohydrate low caloric diets have delayed the development of cardiovascular disease, and that one of the most constant characteristics of such a diet is an immediate and sustained decrease in the plasma cholesterol. If this be true, it would seem that arteriosclerosis, which includes hypertensive heart disease and coronary heart disease, can to some extent at least be prevented by the proper regime to prevent the high cholesterol in the blood; and to prevent this high cholesterol, our treatment should be a fairly high carbohydrate, low fat, and fairly low caloric diet, which is controlled by sufficient insulin products to keep the blood cholesterol as near a normal state as possible in that patient.

The indications and limitations for the use of the various drugs used in cardiac cases are the same in diabetic patients as in non-diabetic patients. However, there are certain types of heart disease in which caution must be exercised in the treatment of diabetes. Primary among these are coronary thrombosis and angina pectoris. It has been shown by numerous observers that insulin can be harmful to patients with these types of heart affections, and that hypoglycemia is to be avoided in these cases. There is much in the literature showing varied reports, from the precipitation of anginal attacks in diabetic patients with damaged myocardiums, to actual deaths. This is thought to be due to the action of insulin. The results obtained from insulin shock are the same as those obtained from a low carbohydrate diet without the use of insulin. Not only may the cardiac diabetic not be helped by too rigorous control of his diabetes, but also he may be made worse by too much sustained lowered blood sugar, or insulin shock. It seems probable that the pathological heart requires more carbohydrate than the normal heart; and the bad effect of insulin is not due to insulin itself but to the lessened carbohydrate it causes to the heart muscle. Consequently, a higher than normal blood sugar level is beneficial to our acute cardiac patients rather than harmful. In these heart conditions insulin and protamine insulin should be used with caution, and in small doses repeated often if necessary. In the elderly diabetic sudden or radical reductions in the carbohydrate is extremely dangerous, and should not be done. Muscular exercise of the cardiovascular patient with diabetes should be encouraged according to the condition of the heart musculature.

In the discussion of question four, there is one particular heart condition which may simulate clinically impending diabetic coma. That condition is coronary thrombosis in a diabetic patient. Since coronary thrombosis occurs quite frequently in these patients, of course glycosuria is common. If infarction occurs, the blood sugar may rise to a very high level, diacetic acid and acetone may show in the urine, and a condition resembling diabetic stupor or coma may develop. When this occurs, we are likely to feel that this is a true diabetic coma development; but it may be the result of an associated coronary thrombosis. Care must be used in the differentiation as to the cause of the hyperglycemia,—and a thrombosis of the heart must not be overlooked. Insulin

if used in too great doses might be very serious to our patient.

The work done by Dr. Joslin and his associates with protamine during the last year seems to show that the blood cholesterol is rarely high with its use in the control of diabetes. This was not true of regular insulin. In many patients they had great difficulty in keeping the blood cholesterol at a normal level. The characteristic pathological point of differentiation of arteriosclerosis due to diabetes and that due to other causes, is that in the diabetic the same type of changes are found in the smaller arterioles that are found in the larger arteries. We wonder with our lower level of cholesterol in the blood obtained with the use of protamine insulin, if we may expect less arteriosclerosis and consequently less heart complications in later years than has been seen formerly in our diabetics. It will be difficult to state definitely for several years at least, that protamine will prevent heart complications in our diabetics; but in the light of former observations as to the possible cause of these complications, we are expecting it to make them less prevalent. It is perfectly possible that the high cholesterol content of our former diets, and the inability to control the cholesterol in the blood, was responsible for the cardiovascular complications seen in diabetes.

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Anemia in General Practice*

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SAYRE, OKLA.

In picking the subject of "Anemia in General Practice," I am especially concerned with the more mild types of this condition, which in big charity hospitals might be overlooked or ignored since they are not of such severity that they might be called dangerous, but at the same time have a great effect upon the wellbeing of the patient. It is of extremely common occurrence, being one of the most, if not the most, common of all conditions seen, which is important from an economic as well as a health standpoint. In my experience, as is true with probably most of you, the greatest majority of these cases are ambulatory and present themselves often with symptoms which they themselves do not connect with the likelihood of anemia. The individual who treats this condition in a "shot gun" manner as is common and very easy to do with the large number of combined proprietary preparations on the market, is overlooking a very remunerative field in medicine and at the same time doing the patient harm.

The person who has an exact classification for anemia, either in regard to diagnosis or treatment, will eventually

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come to grief because of the great individuality of these cases. However, for a basis upon which to work, I present here two classifications, one by "Strauss" in the J.A.M.A., November 14, 1936, another by "Wintrobe," which is a more recent type classification. Many others, such as that by "Haden," may be used. However, the most important thing to my mind is that anemia be treated intelligently, the thing which has not been done to any great extreme in the past.

CLASSIFICATION OF ANEMIA

1. Anemia due to acute loss of blood.
2. Anemia due to increased blood destruction.

(a) Extrinsic causes: Chemicals; in-

TABLE NO. 6. CLASSIFICATION OF ANEMIA

Corpuscular Volume Cubic Microns	Corpuscular Hemoglobin Concentration Per Cent.	Cause	Clynical Syndrome	Treatment
1. Marcocytic—94	30	a. Deficiency of Castle's Anti-Anemia principle.	(1) Pernicious Anemia (2) Pernicious Anemia of pregnancy (3) Rare cases of, (a) Carcinoma of the stomach and intestines (b) Total Gastrectomy (c) Pellagra (4) Tropical Anemia of Wills. (5) Sprue (6) Macrocytic Anemia of Celiac diseases (7) Macrocytic Anemia of liver diseases.	Liver or Liver Extract, or extrinsic factor if this alone is deficient.
		b. Intense activity of bone marrow.	Conditions usually associated with normacytic Anemia (section 11)	Transfusions and treatment of cause.
2. Normacytic— 80 to 90	30	a. Sudden loss of blood.	Acute posthemorrhagic anemia	Transfusion treatment of cause.
		b. Acute destruction of blood	e. g. hemolytic anemia, caused by Malaria.	
		c. Lack of formation of blood.	(1) Aplastic Anemia (Idiopathic and secondary)	Attempts to STIMULATE the blood formation.
			(2) Conditions which decrease amounts of functioning bone marrow, e. g. Leukemia, neoplasma.	
		d. Hydremia	(3) Chronic Inflammatory and noninflammatory diseases "Physiologic" anemia of pregnancy.	
3. Simple Microcytic 80 — to — 30		"Imperfect formation of blood."	Subacute and chronic inflammatory diseases, and chronic non-inflammatory conditions	Transfusions and treatment of cause.
4 Hypochronic Microcytic—80	30	Deficiency of Iron through loss of blood.	(Chronic Posthemorragic anemia) Hookworm Anemia	Iron in large doses. Correction of cause.
		b. Defective diet.	(Diet deficient in food containing Iron)	
			(Chlorosis Idioapathic Hypochromic anemia following total Gastrectomy (some cases) Sprue (some cases) Idiopathic Steatorrhea (some cases)	
		c. Defective absorption.	Hypochromic Anemia of pregnancy.	
		d. Excessive demand for Iron.	Repeated pregnancies	

fections, such as malaria and hemolytic streptococcic.

(b) Intrinsic causes: As hemolytic jaundice, sicklemia, and paraoxysmal hemoglobinuria.

3. Anemia due to decreased blood formation from nutritional deficiencies.
   (a) Pernicious and related macrocytic anemias (sprue, pregnancy, pellagra, and gastro-intestinal disturbances).
   (b) Hypochromic anemias of all types (including that due to chronic loss of blood).
   (c) Anemia due to deficiency of Vitamin C.
   (d) Anemia due to deficiency of thyroid secretions.
4. Anemia due to decreased blood formation from disturbances of blood forming organs.
   (a) Toxic benzene, nitrogen retention, chronic sepsis, and the like.
   (b) Physical radiation.
   (c) Mechanical: Metastatic carcinoma of the bone marrow, Hodgkins disease, leukemia and other conditions.
   (d) Idiopathic disturbances of the blood forming organs: "Aplastic," Cooley's, Splenic, Hepatic, and congenital Anemias.

I believe that for routine use the corpuscular volume or the corpuscular hemoglobin concentration, although very nice to have, is not necessary, if the physician himself will examine the blood smears on questionable or border line cases, since it is easy to get a very definite picture of both the size of the cells and the hemoglobin contents. It is common experience that the degree of anemia often has no relation to ideas formed from clinical findings, as illustrated very clearly in one case of a man with a macrocytic anemia, seen in January of this year, who presented a hemoglobin of 90 per cent, and a red cell count of 1,590,000, and in whom a diagnosis of pernicious anemia was finally made. His only subjective complaint at this time was the presence of mild abdominal cramps and a diarrhea of about two months standing, he was ambulatory and had been doing heavy labor up until the time he was examined. He was put on liver extract, 3cc, every other day along with the general treatment of anemia, and following the third injection his red cell count had risen to 3,970,000, and his sense of wellbeing was much improved so that he could appreciate by comparison that he had been unwell for some months previous to his examination. His case also serves to illustrate two other points, one that the degree and rapidity of response varies remarkably in different individuals and also that the degree of anemia does not necessarily coincide with the subjective feelings of the individual.

Another peculiar thing which is of interest in regard to the treatment of anemias, is the fact that the type of anemia may change, as in one of my prenatals, who at five months had a low grade hypo-chronic microcytic type of anemia, with a hemoglobin of 70 per cent and a red cell count of 4,080,000. She was put on an iron preparation. No red cell count was obtained until two months later. She had a finding of a mild nacrocytic anemia, with a hemoglobin of 90 per cent, and a red cell count of 3,960,000.

The most common types of anemia seen by the average practitioner are, First: Anemia of pregnancy, most always the hypochronic microcytic type. Second: Anemia associated with sepsis, dental sepsis and endocervicitis, being in my experience the most common causes. Third: Those due to dietary deficiencies, which have become increasingly common since 1929. Fourth: Anemia of infancy, which is usually a dietary deficiency, but this condition must be put in a class by itself. This, of course, does not include all the anemias seen.

The Microcytic types of anemia usually present the greatest problems. In these the average volume of red cells are usually 90 cubic microns. The definite cause is not known, but it is thought they are related somewhat by the underlying pathology. But it is known that they have a deficiency in anti-anemic substance, as discovered by Castle (who has done more to advance our knowledge of this group than probably any other man). It is thought that this substance is formed in

the stomach and stored in the liver, and regardless of whether this is true or not, it is of value to use as a presumption.

The treatment of anemis may possibly be divided into three divisions, namely: Prevention, which is, of course, the ideal way when possible. Second: The general treatment of anemia, and Third: Treatment by specific remedies. The field of prevention is rapidly becoming more extensive and is of especial value in anemia of pregnancy, and in anemia of infancy in those due to diet deficiency as well as those due to hemorrhage. In prevention of anemia of pregnancy it is of value to do blood counts at repeated intervals (three or four weeks) though some say that this is nonessential, a fact which I do not believe to be true, and some authors believe that the routine use of calcium or cod liver oil, or both, is of value in preventing anemia in pregnancy, another fact which, according to my experience, I cannot agree with, although they are useful for other reasons. It is recommended by some that the routine use of Iron, especially in the latter three months of pregnancy, is to be recommended. This is true in some areas because the percentage of anemia in pregnancy runs as high as 60 per cent. I prefer repeated blood counts, because of the fact that our percentage seems to be much lower than the above figure. Of course, this does not apply to the microcytic anemia of pregnancy.

The prevention of anemia in infancy is another subject which is open for much discussion. In our part of the country it is especially common, due to prolonged breast feeding without additional feeding. It apparently has been increasing, probably due to the economic distress brought on by the drought.

The prevention would, of course, involve the use of a well balanced diet, and the early use of egg yolk, certain cereals, vegetables and other substances that have a high value of iron contents, and occasionally the addition of some iron preparation. Dietary deficiency in general has been an ever increasing cause, especially in the last few difficult years, and should need no explanation. However, it is by no means limited to the economically unfortunate persons.

Focal infection is a definite cause, although usually the associated anemia is mild, unless, of course, there should develop a more severe generalized infection, or a super-imposed gastro-intestinal disturbance, which is not at all uncommon. The most common focal infection as the cause in my experience has been dental sepsis, cholecystitis and endocervicitis, the latter usually being more mild.

Anemia from sinus diseases and prostatic diseases are comparatively uncommon or perhaps I have overlooked many cases from these causes. Of course, the preventive treatment of anemia due to these causes is the removal of them, since they very often precede the anemia by many months. The general treatment includes such things as, bed rest, high caloric and high protein diets, avoidance and removal of the infections, transfusions, etc. Bed rest should be recommended to any person wherein any severe type of anemia is found, even mild cases where response to treatment is not satisfactory, and in mild cases some rest during the day will enhance the speed of recovery. When there is evidence of an infection it should be removed; however, with much more caution than usual, since the resistance of an anemic patient is much lower. Removal applies to Hookworm Anemia and Malaria as well as the focal and many other infections.

Transfusians are useful in the anemias due to acute hemorrhage and many other conditions in which the cause may not be known, ir if there is no specific treatment, such as carcinoma, leukemia, aplastic anemia, etc. They may also be used to a great advantage in severe anemia even where specific treatment is used or where response is slow. In the specific treatment of the macrocytic type of anemia, the intrinsic factor as supplied by liver or ventriculin is of value particularly in pernicious anemia or pernicious anemia of pregnancy, and temporarily so wherein either the formation of the intrinsic factor in the stomach or its storage in the liver is interfered with as in carcinoma, cirrhosis, etc. In pellagra and sprue the intrinsic factor may be supplied with liver and vitamin B 11. In order to actually determine the value of liver

therapy, it is of value to do a repeated reticulocyte count, a procedure that is very simple and is much neglected since this is the first indication of an increased red cell formation. It was originally thought that in case of pernicious anemia it was necessary to supply the intrinsic factor to an excess of that needed to have a normal blood picture and in order to prevent neurological complications, but according to more recent work of "Grinker" and his associates the treatment of pernicious anemia has very little, if any, effect upon the neurological lesions, and considers any liver given in excess of that required to keep the blood picture normal as wasted. This, of course, does not apply to peripheral neuritis, a condition which is sometimes present and may be aggravated in any type of anemia, and it is quite possible that any of the subjective symptoms are often due to weakness caused by the anemia. Response to liver therapy cannot be regarded conclusive that the condition is pernicious anemia, since the same thing may be seen in pellagra and many other conditions. In pellagra the anti-anemic factor may be supplied in the form of Vitamine B 11. This anti-anemic factor may be given by mouth, intramuscularly, and in extreme cases may be given by the intravenous method.

Concentrated liver is probably the most commonly used, although it has been shown that autolyzed liver extract has three or four times the potency of the original substance. Ventriculin is also valuable. The choice of preparation is mainly determined by the economy and the personal experience of the physician. The dosage and frequency of administration is governed entirely by the severity and degree of response. The number of remissions and relapses may also affect the dosage, it being something that may be determined only by thorough observation over a long period of time.

The use of copper has been largely discontinued because of its toxicity and also because of the fact that the iron preparations are contaminated with this preparation. In most of the anemias the copper content of the blood is increased, and with the possible exception of anemia of infancy its use has been largely discontinued.

The use of iron is of value in the hypochromic microcytic type, which includes many iron deficiency anemias. The cause may be due to the loss of blood, post-hemorrhagic anemia, defective diet, defective absorption or excessive demand for iron. The type of iron varies with the physician and the amount with the preparation. A reduced iron requires 45 grains daily, ferrous carbonate 60 grains, daily, both of these substances being insoluble. Two soluble substances are iron and ammonium citrate and ferrous sulphate, which requires 15 grains daily. I, personally, use ferrous sulphate because of its solubility and small dosage. There might be indications for green iron and ammonium citrate, intramuscularly, where iron is not tolerated by mouth; however, I have not used this and know very little about it.

Vitamin C should always be considered a therapuetic agent when there is a vitamin deficiency associated. Although I frequently do a tournique test, I have not as yet seen many cases where its use was indicated, except in well developed scurvy, a condition which we see rarely except in children and there, of course, the treatment is usually obvious.

Anemia due to thyroid deficiency is another type of mild anemia, and responds readily to thyroid therapy, although I have very little familiarity with this condition.

Dilute hydrochloric acid in a preparation to be used in cases where there is poor absorption of iron where there is achlorhydris.

Triple Primary Carcinoma In Otolaryngology

J. C. Drooker, Boston (Journal A. M. A., Oct. 9, 1937), presents a case in which it can be shown by microscopic proof that there occurred three separate and distinct primary carcinomas all situated above the thorax. The patient has survived all these three primary malignant tumors, one recurrence, and a grade three metasastasis. He was seen May 20, 1937, and was found to be symptom free and showed no evidence of recurrence nine months since his last operation. So far as he has been able to find, it is the only reported case in which surgical, roentgen and radium therapy of three separate and histologically different carcinomas occurring within the anatomic scope of the rhinolaryngologist has survived. Treatment of a patient afflicted with multiple primary neoplasms should be carried out as if they were single carcinomas. In the case reported the requirements of Billroth concerning triple primary carcinoma are fulfilled.

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McAlester, Oklahoma

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McAlester, Oklahoma

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Failure to receive The Journal should call for immediate notification of the Editor, McAlester Clinic, McAlester, Oklahoma.

Local news of possible interest to the medical profession, notes on removals, changes of addresses, births, deaths and weddings will be gratefully received.

Advertising of articles, drugs or compounds unapproved by the Council on Pharmacy of the A. M. A., will not be accepted.

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EDITORIAL

PRINCIPLES AND PROPOSALS OF THE COMMITTEE OF PHYSICIANS

The Board of Trustees has especially authorized the publication of the following statement:

Following the publication of the report of the American Foundation Studies in Government, a small group of physicians, assembled in New York, developed certain principles and proposals which have since been circulated by a self-appointed Committee of Physicians among the medical profession of the United States, with a view to obtaining signatures in their support. During a period of approximately six months, some 430 medical men have apparently permitted the use of their names. Early in November the self-appointed group of physicians released to the press for Sunday, November 7, a statement of principles and proposals to which the names of the 430 signers were affixed. The newspapers generally heralded this action as a revolt against the American Medical Association, in a great majority of the cases indicating that there was a revolt in behalf of "state medicine." The publication of this manifesto and the attached signatures has been heralded with glee by many of those who have been opposing the American Medical Association in behalf of cooperative practice, sickness insurance, and various fundamental changes in the nature of the practice of medicine. Within the last week another series of proposals has come from another self-appointed group requesting signatures of physicians. This series of proposals includes the suggestion for enabling legislation for sickness insurance.

The American Medical Association is an organization of physicians along strictly democratic lines. Representatives of county medical societies send delegates to state medical societies and these, in turn, send their delegates to the House of Delegates of the American Medical Association. It is possible for any physician, through his delegate, to obtain consideration of any proposal which he may wish to bring to the attention of the House of Delegates. At the Atlantic City session the delegates from New York State presented these principles and proposals, slightly modified, as an action of the House of Delegates of the New York State Medical Society. They were carried before a reference committee and, in several sessions of that reference committee, considerable numbers of physicians presented arguments for and against their adoption. The House of Delegates, however, after thorough consideration of the report of the reference committee, and with full cognizance of the method of development of these principles and proposals, and of the considerations which were involved in their passage by the House of Delegates of the New York State Medical Society, did not accept them. The House of Delegates did, however, point out the willingness of the medical profession to do its utmost today, as in the past, to provide adequate medical ser-

vice for all those unable to pay either in whole or in part.

Why, then, any necessity for the circulation of petitions presenting proposals for fundamental changes in the nature of development, distribution and payment for medical service? Is there a well designed plan to impress the executive and legislative branches of our government with the view that the American medical profession is disorganized, distrustful of its leaders, undemocratic in its action and opposed to the best interests of the people? Who may profit from such evidence of disorganization? Is there any evidence that the self-appointed Committee of Physicians and the 430 physicians who have affixed their names to these principles and proposals are any better able to represent the opinion of the American medical profession than the democratically chosen House of Delegates of the American Medical Association—one of the most truly representative bodies existing in any type of organized activity in this country today?

The House of Delegates has given its mandate to the Board of Trustees, to the officers and to the employees of the Association. That mandate opposes the principles and proposals emanating from the Committee of Physicians, and equally the new proposals. If the House of Delegates sees fit to depart from the principles now established, it will be the duty of the Board of Trustees, the officers and the employees of the American Medical Association to promote such new principles as the House of Delegates may establish. Until, however, the regularly chosen representatives of the 106,000 physicians who constitute the membership of the American Medical Association (now the largest membership in its history) determine, after due consideration, that some fundamental change or revolution in the nature of development, distribution and payment for medical service in the United States is necessary, physicians will do well to abide by the principles which the House of Delegates has established. They will at the same time deprecate any attempts inclined to lead the executive and legislative branches of our government, as well as the people of the United States, into the belief that the American medical profession is disorganized.

Members of the medical profession, locally and in the various states, are ready and willing to consider, with other agencies, ways and means of meeting the problems of providing medical service and diagnostic laboratory facilities for all requiring such services and not able to meet the full cost thereof. The American Medical Association has reaffirmed its willingness on receipt of direct request to cooperate with any governmental or other qualified agency and to make available the information, observations and results of investigation, together with any facilities of the Association. Thus far, no call has come from any governmental or other qualified agency, for the cooperation of the American Medical Association in studying the need of all or of any groups of the people for medical service, to determine to what extent any considerable proportion of our public are actually suffering from lack of medical care. The offer still stands as evidence of the willingness of the American Medical Association to aid in finding a solution to any or all of the problems in the field of medical care that now prevail.

Editorial Notes—Personal and General

APPLICATION BLANKS are now available for space in the Scientific Exhibit at the San Francisco Session of the American Medical Association, June 13-17, 1938. The Committee on Scientific Exhibit requires that all applicants fill out the regular forms.

Application blanks may be obtained from the Director, Scientific Exhibit, American Medical Association, 535 North Dearborn street, Chicago, Illinois.

THE OKLAHOMA INTERNISTS' ASSOCIATION will meet Thursday, January 6, 1938, at the Mayo Hotel, Tulsa, at 12:30 for a luncheon, after which Dr. Morris Fishbein, Chicago, guest speaker, will talk on "Medicine and the National Policy." For reservations write to Dr. F. Redding Hood, 1200 North Walker, Oklahoma City.

DR. O. L. PARSONS, Lawton, has been appointed County Health Superintendent of Comanche County, to succeed Dr. L. C. Knee of Lawton.

DR. H. K. SPEED, JR., Sayre, was named Medical Superintendent of the new Western Oklahoma Charity Hospital at Clinton, by the State Board of Affairs.

DR. CARL E. BUCK, Field Director, and MISS EDITH BOYD, Field Secretary, of the American

Public Health Association, New York, have set up an office in the State Department of Public Health for the purpose of making a health study in the state of Oklahoma.

DR. G. E. HARRIS, Hugo, has been appointed as County Health Superintendent of Choctaw County, to succeed DR. W. N. John, Hugo.

DR. FORREST S. ETTER, Bartlesville, has been appointed County Health Superintendent of Washington County.

DR. C. P. BONDURANT, Oklahoma City, was the guest speaker at the Pittsburg County Medical society meeting held at McAlester, November 19th. He spoke on "Common Diseases of the Skin," illustrating the numerous skin conditions by a large varied collection of lantern slides.

News of the County Medical Societies

LINCOLN County Medical society members were entertained by Drs. Carl H. Bailey and D. W. Davis, Stroud, with a turkey dinner November 10th. This was followed by a meeting with Dr. R. L. Murdock, Oklahoma City, as guest speaker, presenting a paper on "Diseases of the Proctodium and Colon." Dr. Bailey concluded the meeting with a discussion on "Therapeutic Animal Products Used in Medicine."

CARTER County Medical society met in Hotel Ardmore with about 75 doctors present from Carter and adjoining counties. A representative body of leading business men and teachers was also present to enjoy a most instructive lecture on "Food Fads and Fallacies" by Dr. Tate Miller of Dallas, Texas, "Syphilis: When Is It Cured?" by Dr. R. M. Adams, director of Venereal Disease Control, State Health Department, Oklahoma City, Okla. Both papers were received with much enthusiasm.

Discussions were by Drs. D. M. Higgins of Gainesville, Texas, G. E. Johnson, Ardmore, and R. M. Parish, County Health Physician.

Dr Miller held the audience spellbound with his wit and wisdom. More would have heard him if the dining room of the hotel had been larger.

The milk producers furnished the society with a lovely turkey dinner, milk, ice cream and all the trimmings. This was also appreciated and enjoyed by the society and we thank the Colvert Ice Cream Company and Mort Woods' Primrose Dairy. We also wish to thank Miss Minnie Dixon who furnished the piano music.

We regretted that our state president, Dr. Sam McKeel, was not able to appear on the program of this November meeting.

DR. G. E. JOHNSON,
Ardmore Secretary.

News Notes of Woman's Auxiliary

Following is report from the Auxiliary to the Oklahoma State Medical Association:

STATE OFFICERS

President—Mrs. Hugh Perry, 1914 South College, Tulsa.

President elect—Mrs. George Garrison, 508 N.W. 40th street, Oklahoma City.

Vice-president—Mrs. E. Eugene Rice, 2026 North Beard street, Shawnee.

Recording secretary—Mrs. Frank L. Flack, 1747 South Florence avenue, Tulsa.

Treasurer—Mrs. Walter S. Larrabee, 2738 East 22nd place, Tulsa.

Historian—Mrs. N. E. Duncan, Forgan, Okla.

Parliamentarian—Mrs. Edward D. Greenberger, McAlester, Okla.

PRESIDENTS OF COUNTY AUXILIARIES

Cleveland County—Mrs. R. J. Reichert, Moore, Okla.

Garfield County—Mrs. P. W. Hopkins, 423 West Pine, Enid, Okla.

Oklahoma County—Mrs. Henry H. Turner, 525 West 13th street, Oklahoma City.

Pittsburg County—Mrs. L. S. Willour, 6th and South, McAlester, Okla.

Pontotoc County—Mrs. S. P. Ross, 631 East 17th street, Ada, Okla.

Pottawatomie County—Mrs. E. Eugene Rice, 2026 N. Beard street, Shawnee, Okla.

Tulsa County—Mrs. James L. Miner, 2128 East 31st street, Tulsa, Okla.

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Hygeia—Mrs. Marion Sheets, 508 South Buchanan street, Enid.

Press and publicity—Mrs. J. Fred Bolton, 212 East 27th street, Tulsa.

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Organization—Mrs. D. H. O'Donoghue, 914 N.E. 15th street, Oklahoma City.

Program-health education—Mrs. J. L. Haddock, Jr., 112 University Place, Norman.

Printing—Mrs. Charles J. Woods, 1552 East 17th Place, Tulsa.

An Auxiliary to the Pontotoc County Medical Society was organized in June with fourteen (14) charter members. The executive board of the State Medical Auxiliary extends greetings and best wishes to this newest chapter.

MRS. FRED BOLTON,
Chairman of Press and Publicity.

OBITUARIES

GWEN WHELPLEY CRAWFORD, M.D., Fellow AMA, Bartleville, Oklaoma; University of Arkansas School of Medicine, 1930; Aged 30; died, November 23, 1937, of a broken neck received in an automobile collision near Antlers, Oklahoma.

Control of Cancer Committee Meeting

The American Society for the Control of Cancer met in Oklahoma City, November 11, 1937.

Those attending the meeting were Dr. J. W. Cox, Southern Field Representative; Marjorie B. Illig, Boston, National Commander Women's Field Army; Mrs. W. M. Van Divort, Nowata, State Commander Women's Field Army; Dr. Ralph McGill, Tulsa, member cancer committee Oklahoma State Medical Association; Dr. Everett S. Lain, Oklahoma City, member state cancer committee; Mrs. G. K. Nusbaum, Enid, Vice-Commander Women's Field Army; Dr. Paul B. Champlin, Enid, member cancer committee Oklahoma State Medical

Association; William E. Eastland, M.D. Oklahoma City, member, and Chas. M. Pearce, M.D. Oklahoma City, member.

WRITTEN EXAMINATION

The American Board of Internal Medicine will hold its next written examination on Monday, February 14, 1938, in various centers of the United States and Canada.

The examination will consist of two sessions of three hours each with the morning session held at 9:00 o'clock A. M. and the afternoon session held at 2:00 o'clock P. M.

The candidates who are successful in this written examination will be eligible to take the practical examination which will be held in San Francisco the Friday and Saturday prior to the opening of the Annual Session of the American Medical Association in June, 1938.

The final date for filing applications for this written examination is January 15, 1938, and all applications should be in the office of the chairman before that date.

For further particulars and application blanks please address Dr. Walter L. Bierring, M.D., Chairman, American Board of Internal Medicine, Suite 1210, 406 Sixth avenue, Des Moines, Iowa.

Books Received and Reviewed

SYNOPSIS OF GENITOURINARY DISEASES by Austin I. Dodson, M.D., F.A.C.S., Richmond, Virginia. Professor of Genitourinary Surgery, Medical College of Virginia; Genitourinary Surgeon to the Hospital Division, Medical College of Virginia; Genitourinary Surgeon to Cripple Children's Hospital; Urologist to St. Elizabeth's Hospital; Urologist to St. Luke's Hospital and McGuire Clinic. Second Edition, 112 Illustrations. The C. V. Mosby Company, St. Louis, 1937. Cloth, Price $3.00.

There is presented in this book a general, concise synopsis of the diagnosis and treatment of diseases of the genito-urinary tract. It is especially practical to the general practitioner because of its brief and condensed form, so arranged for quick consultation. It is very comprehensive and well illustrated.

METRAZOL IN DENARCOTIZATION

The cardio-respiratory stimulant, Metrazol, is receiving considerable attention not only for emergencies during anesthesia, but for denarcotization procedures following surgical operations.

The plan which is frequently used is to inject 3 cc. of Metrazol intravenously and 3 cc. intramuscularly immediately after the close of the operation. A smaller dose, 1 or 2 cc., is given in one-half to one hour and repeated one hour later if indicated. Usually this dose does not awaken the patient, but is given with the idea of restoring the reflexes, then allowing the patient to sleep through the pain zone with the surgical anesthetic acting as a post-operative analgesic.

According to Hogan (Amer. Jour. Surg., 38:340, Nov., 1937), "Metrazol is a milder, more uniform, more effective means of accomplishing complete aeration of the lung than the use by the individual of the carbon dioxide-oxygen mixture with the attendant dangers of over-stimulation and laceration of the smaller alveoli." Hogan has observed that often the excursion of the thorax is increased before the intravenous injection of Metrazol is completed.

Further information on Metrazol and its use in combatting depression from barbital derivatives, the opiates, asphyctic conditions, etc., will be sent upon request to the Bilhuber-Knoll Corp., 154 Ogden Ave., Jersey City, N. J.

"Benzedrine Sulfate" in Narcolepsy

Ulrich (N. E. J. Med., 217:696, Oct. 28, 1937) makes a second report on the treatment of narcolepsy with "Benzedrine Sulfate" (benzyl methyl carbinamine sulfate, S.K.F.). Some of his patients have now had continuous treatment for nearly two years.

Seven of the ten cases of narcolepsy were complicated by cataplexy. All had complete or marked relief on administration of "Benzedrine Sulfate" in doses varying from 10 to 60 mg. a day, the average daily dose being 25 mg. In only one case was there an apparent tolerance developed. Cataplectic symptoms were particularly benefited, and did not reappear even after withdrawal of therapy.

No evidence of permanent deleterious effects or habit formation was found. Slight rise in blood pressure and basal metabolic rate was produced in some instances, but these effects were transitory. Anorexia and momentary discomfort were prevented by reducing the dose or changing the time of administration.

Two patients who suffered from obesity had an 11 per cent loss of weight with "Benzedrine Sulfate" in doses of 20 to 30 mg. a day. This effect was not observed in patients of normal weight.

Ephedrine was tried in three cases of narcolepsy, but was found to be of slight or no benefit. Dibenzyl carbinamine, given to four patients, failed to relieve narcoleptic symptoms and produced gastrointestinal reactions, especially in large doses.

The author concludes that "Benzedrine Sulfate" provides the only satisfactory treatment for narcolepsy, but cautions against unsupervised use.

San Francisco American Medical Association Meeting June 13th—17th—1938

Members should write today if they comtemplate attending the American Medical Association meeting in San Francisco this June and obtain their hotel reservations. See recent issues of the Journal of the American Medical Association giving list of San Francisco Hotels and rates. Send in your requests to Doctor Frederick C. Warnshuis, 450 Sutter Street, San Francisco, California, giving names of members of your party, type of accomdations desired, rates, date of arrival and departure.

The San Francisco Session promises to be an outstanding one by reason of the scientific program, scientific and technical exhibits and the social functions. In addition, there is the lure of California with its scenic beauty, majestic mountains, fertile valleys and historical background. An opportunity presents to combine profit of the program with the pleasures of visiting San Francisco, the Golden Gate City with the two bridges, engineering wonders of the world.

Come by train, boat, auto or plane—no matter how—but come. Your visit will ever be one of pleasant memory. San Francisco and the bay area medical profession anticipate the pleasure of being your hosts and cordially invite you to come to the San Francisco Meeting.

Watch the Journal of the American Medical Association for program features and events.

ABSTRACTS : REVIEWS : COMMENTS *and* CORRESPONDENCE

SURGERY AND GYNECOLOGY

Abstracts, Reviews and Comments from
LeRoy Long Clinic
714 Medical Arts Building, Oklahoma City

Pituitary Basophilism. A Review of 42 Verified Cases, with a Report of a Personal Case. By P. Brooke Bland and Leopold Goldstein, Philadelphia, Pa. Surgery, Gynecology and Obstetrics, November, 1937, Page 644.

The summary of this excellent article is a splendid abstract of the information it contains. The summary is quoted as follows:

1. The clinical course of a personal case of pituitary basophilism in a girl of 20 years old under observation for a period of three years is described. Osteoporosis and hypertension, two symptoms usually found, were not present in the case recorded. The patient made a pronounced improvement after receiving several courses of deep roentgen irradiation to the pituitary gland.

2. The special features of 42 verified cases of pituitary basophilism are tabulated and analyzed. A definite diagnosis of basophilic adenoma was made in 35 cases; an increase in basophilic cells was reported in one case. A chromophobe adenoma was successfully removed by operation in one case. In the five remaining patients, the pituitaries disclosed adenomas composed of chromophobe or eosinophilic elements.

3. Thirty-two patients were female, and 10 were male.

4. The most conspicuous clinical features of basophilic adenoma are as follows: (1) plethoric obesity, especially of the face, (2) hirsutism, (3) amenorrhea (impotence or loss of libido in the male), (4) cutaneous striae, (5) osteoporosis, (6) hypertension, and (7) glycosuria.

5. Other symptoms of prominence are: headache, asthenia, pains in the extremities, polyphagia, polydipsia, and symptoms referable to the cardiovascular and respiratory systems.

6. Death in the recorded cases was usually due to infections of various types or pulmonary complications. Patients with basophilic adenoma of the pituitary cannot withstand any type of infection, not even one of a minor nature.

7. Hypertrophy of the adrenals was an associated finding in 18 or 63 per cent of 29 cases in which the adrenal condition was described. In three cases definite adenomas of the adrenal were also present. The association of adrenal hypertrophy and adenomas is also encountered and has long been known to be a definite association of acromegaly.

8. Five patients were operated upon for suspected adrenal neoplasms and all died following operation. In only one patient was an adrenal tumor found to be present at the time operation was performed. Later at autopsy a minute basophilic adenoma was discovered in the pituitary gland.

9. Therapy for patients exhibiting the manifestations of Cushing's syndrome should consist in deep roentgen (high voltage) irradiation of the pituitary gland. Irradiations of high dosage should be employed (300 to 1,200 r units to each side of the head). This should be repeated every four to six months, if only slight or no improvement occurs. Patients with this syndrome apparently withstand large exposures of irradiation very well and show no ill effects.

10. Finally, the authors believe that patients with the clinical syndrome of pituitary basophilism should not be exposed to the risks of adrenal exploration, unless definite evidence of tumor is found, or repeated high voltage irradiation therapy has failed to bring about improvement.

The case history is rather completely given and a thorough study of the diagnosis and pathology is reviewed.

Comment: This is not a very common condition but it is here reviewed because pituitary basophilism, adrenal hyperplasia and tumors, and arrenoblastoma of the ovary frequently arise in accurate differential diagnosis in patients who have amenorrhea and hirsutism. In such patients, who are uncommon, one must not only determine the presence or absence of one of the above conditions but must attempt a thorough differentiation of them because the therapeutic attack is entirely different, lying in (1) roentgen therapy for pituitary basophilism; (2) operative attack upon the adrenals for removal of tumor and extirpation of arrenoblastoma of the ovary. X-ray treatment of the pituitary for pituitary basophilism and surgical extirpation for arrenoblastoma of ovary produce excellent results.

Wendell Long.

A Case of Invagination of the Sigmoid through the Rectum and the Anus. (UN CAS D'INVAGINATION DU SIGMOIDE A TRAVERS LE RECTUM ET L'ANUS.) By Charles LeFrancois. L'Unoin Medicale du Canada, Nov. 1937.

A woman 39 years of age came to the hospital because of an irreducible prolapsus of the rectum which had existed for two days.

Two years before there was a rectal prolapse which the patient was able to reduce without difficulty. Following that there was blood in the stool about twice a week. In connection with the difficulty, there was rebellious constipation, dull pains in the lower abdomen, loss of appetite and a loss of weight of 20 pounds.

On examination with the finger between the extruded bowel and the canal there was an absence of any evidence of a normal cul-de-sac. It was an invagination through the rectum, and was apparently caused by a granulating tumor that was seen on the summit of the prolapsed mass. During the manipulation associated with the examination the invagination was reduced, and the patient was greatly relieved.

Several days later a rectoscopic and a sigmoidoscopic examination did not reveal any evidence of

tumor. A radioscopic examination was requested. The radiologist reported: "Dolichocolon with ptosis of the transverse colon. Progression of the injected opaque material without difficulty, evacuation very incomplete."

Notwithstanding the negative findings it was decided to perform a laparotomy for the removal of the cancer that had been seen on the exterior portion of the mass at the time of the prolapse.

At operation there was a neoplasm about the size of a mandarin, about 18 inches from the rectum, with some enlarged glands in the mesocolon. There was a resection of about 10 inches of the sigmoid with immediate end to end closure.

At first the postoperative course was excellent, but about ten days after the operation there were evidences of obstruction thought to be due to an abscess that had developed about the anastomosis. The patient was given injections of "hypertonic serum" (presumably hypertonic sodium chloride solution). This was followed by great relief, and the patient was out of bed 20 days after the operation, practically well.

The pathological report was: "Epithelioma, cylindric of the large intestine with inflammatory reaction in numerous lymph glands of the mesocolon."

Eighteen months after the operation the patient had gained 20 pounds in weight, and was apparently well.

The author remarks that colo-rectal invagination is pretty rare. In 1911 Elliot and Corscaden collected from the extant literature the histories of 11 cases. In 1925 Guellette was able to collect from the literature about 18 cases. Since 1925 only three other cases have been published.

It is remarked that in the cases of intestinal invagination encountered in babies and children 90 per cent are "primitive." In the adult the invagination is secondary or consecutive to a Meckel's diverticulum, a foreign body, or a tumor of the intestines, "and thus invagination of the sigmoid through the rectum is nearly always due to cancer of the sigmoid."

LeRoy D. Long.

Postoperative Thrombosis and Embolism. By Frederic W. Bancroft, Margaret Stanley-Brown, & Erwin Chargaff, New York. Annals of Surgery, November, 1937, Page 868.

"There is no greater tragedy in surgery than to have a patient who is apparently convalescing normally, either die in his sleep about the tenth day postoperative, or just as he is preparing to go home, suddenly have an attack of shortness of breath and expire."

No real attempt has been made to see if there is some underlying factor that makes some patients more susceptible to this condition than others. The present report comes from work done at Presbyterian Hospital and at the New York Hospital, the two great medical centers in New York City.

The authors are confident that the physical factors accepted by most authors; namely, dehydration, stasis, infection and trauma, are the main causes of postoperative thrombosis, thrombophlebitis and embolism.

They also feel that there must be in addition to the above factors, a biochemical change in the blood which precedes and accompanies thrombophlebitis and embolism, because all of the physical factors may be present in certain patients and no accidents occur, while in other patients the minimum number of the physical factors may be present and an accident result. They proceed on the theory that where there is hyperactivity there is also hypoactivity. Some people have definite bleeding diatheses, such as can be found in hemophilia, cerain purpuras and obstructive jaundice. If there are potential bleeders, why cannot one assume there are potential clotters? The investigators proceeded on the theory that this might be true and they immediately started to make a careful analysis of the blood factors involved in clotting before a thrombus occurs. They accepted the following theory of blood coagulation: Prothrombin plus calcium plus thrombokinase creates thrombin. Thrombin, when combined with fibrinogen, gives fibrin, or clotted blood.

The above named factors are the main activators of blood clotting, and it may be said that the only inhibitor of blood clotting which so far has been isolated from the human body in a recently pure state is heparin.

Since 1934 the investigators have examined patients routinely preoperatively and five and nine days postoperatively. They are obviously unable to tell preoperatively what patients are apt to have an accident, and the five and nine day postoperative are, in general, the danger periods. They rely on the tests for prothrombin and fibrinogen. The prothrombin test, which was simplified by Quick, is a simple one and can be performed in any laboratory. The fibrinogen test is somewhat more complicated. So far the authors have not been able to simplify the analysis so that only one test need be utilized in order to give a true index of the patient's bleeding and clotting tendencies. The prothrombin test, designated by the authors as the plasma clotting index, is more indicative of clotting tendencies wherein infection is at a minimum, while the fibrinogen test, when high, suggests infection and the likelihood of thrombophlebitis.

Their study of the prophylactic regimen against thrombosis and embolism made them conscious of certain postoperative therapeutic measures which they mention as follows:

1. "In abdominal cases every effort should be made to reduce the postoperative nausea and vomiting in order to keep the abdominal wall and field of operation quiet. The Levin tube, inserted through the nostril when the patient is conscious, is routinely introduced wherever vomiting occurs to any degree."

2. "Early exercise of the extremities is advised in order to prevent venous stasis."

3. In their opinion, tight abdominal dressings should be eliminated. Some dressings tend to compress femoral vein as it passes beneath Poupart's ligament. They make the following statement: "As distention is a factor in increasing abdominal pressure, and therefore venous stasis, we believe that food should be given early."

4. Dehydration. "Even in uncomplicated cases the excess of fluid loss from the body over the fluid intake in the first 48 hours postoperative is tremendous. If vomiting persists and the temperature is high, dehydration occurs very rapidly." They strongly advise intravenous administration of fluid until patient is able to take an adequate amount by mouth.

If the examination of the blood taken either pre- or postoperatively shows a high plasma clotting index and a high fibrinogen content, they place patients on a carbohydrate and fluid diet, limiting their fats and proteins. They have shown to their satisfaction in dogs and humans, that this diet, which for the sake of convenience they call a bleeding diet, will diminish the bleeding factors, while a diet rich in nucleoproteins and fats will

cause marked increase. In addition they advise the administration of sodium thiosulphate.

The blood of 920 cases was examined. Of these, 111, or 12 per cent, showed high clotting indices. Only 46 per cent of these highs received prophylactic treatment. In the treated groups no accident occurred. In the untreated group nine accidents occurred.

This is a most interesting and profitable investigation which has already yielded valuable information concerning this most dreaded accident in surgery.

LeRoy D. Long.

True Branchiogenic Cyst and Fistula of the Neck. By Herbert Willy Meyer, New York. Archives of Surgery, October, 1937, Page 766.

In this article there is an interesting report of the case of a boy nine years of age who, "was born with a small opening on the lateral side of his neck just in front of the sternocleidomastoid muscle and just below the angle of the mandible, on a level with the hyoid bone. It was first noticed when he was five months old, when it was an opening the size of a pinpoint. The mother stated that colorless matter came out. A swelling developed below the left ear, and when the boy was 18 months old the swelling was lanced by a physician. It subsided, and the wound closed. After this at intervals the swelling would recur and open by itself, and a discharge would come through the previous incision. Three or four times in the next few years it was necessary to lance the swelling. When the boy was four years old it recurred worse than before, and he was operated on by another surgeon, who tried to dissect out the tract. Apparently, from the description as given by the parents and Dr. Tumen (who referred the patient), at this operation an opening was made into the trachea, and the operating surgeon believed that the tract was connected with the trachea. The wound finally healed, but the same sequence of events continued for the next five years, until the present time."

Dye injected into the fistulous opening went upward in the direction of the tonsillar fossa. There was a preoperative diagnosis of probable lateral cyst and fistula of the neck, a remnant of the pharygothymic duct, and it was felt that at operation one would "probably find the tract running upward toward the tonsillar fossa, and entering the pharynx through the bed of the removed tonsil or close to the posterior pillar."

At operation the fistulous opening was found to be "circumscribed, and the infiltrated tissue surrounding the fistulous tract was dissected free from the sternocleidomastoid and the platysma myoides muscle." The tract did not run toward trachea.

"There was an infiltrated area that passed upward and somewhat posteriorly toward the ear, but it could not be easily dissected free." It was found that the principal portion of the tract passed upward and somewhat inward into the jugular fossa. Contrary to what was expected it curved upward and backward to the apex of the jugular fossa. It was adherent to the styloid process. In removing it it was necessary to remove the tip of the styloid process. Recovery followed the operation.

There is a discussion of the embryology, based, principally, upon the investigations of Wenglowski. The author refers to the fact that in an article entitled, "Congenital Cysts and Fistulae of the Neck," published in the Annals of Surgery in 1932, he had discussed the details of the embryologic development of the branchial apparatus and of the anlage of the thymus.

In this article there is a brief, but very concise and instructive discussion of the embryology.

In this connection, the following quotation from the article is of significant importance: "The branchial apparatus belongs to the head and not to the neck. Any congenital pathologic condition referable to the branchial apparatus in a human being must rest along the lower jaw and around the hyoid bone and the cornu of this bone. Nothing below the lower level of the hyoid bone has any genetic relation with the branchial apparatus. All congenital anomalies caused by incomplete retrogression of the branchial apparatus must be located in the region around or above the lower border of the hyoid bone. Any congenital anomaly below this level is in definite relationship with the pharyngothymic duct and must be classified as a lateral cyst or fistula originating from the pharyngothymic duct."

LeRoy D. Long.

EYE, EAR, NOSE AND THROAT

Edited by Marvin D. Henley, M.D.
911 Medical Arts Building, Tulsa

Injuries of the Frontal and Ethmoidal Sinuses with Special Reference to Cerebrospinal Rhinorrhoea and Aeroceles. Hugh Cairns. London. The Journal of Laryngology and Otology, September, 1937.

A problem of interest is the prevention of intracranial infection and the treatment of cerebrospinal rhinorrhoea following injuries to the frontal and ethmoidal sinuses.

The author divides the cases of cerebrospinal rhinorrhoea into groups.

Group one includes fractures into the frontal and ethmoidal sinuses. The acute state. A head-on blow is most likely to produce this condition. The most dangerous lesion is the fracture of the cribriform plate, for usually a tear of the overlying dura mater accompanies it. When the frontal sinus alone is fractured, the risk of cerebrospinal rhinorrhoea and intracranial infection is not so great. Cairns' illustrative cases are reported in detail as to findings, procedure and termination. His first case is a fracture of the frontal sinus without intracranial complications. This was a severe fracture with recovery. His second case is a fracture of the frontal sinus, cerebrospinal rhinorrhoea and subdural aerocele. Spontaneous recovery. The third case is that of an aeroplane accident that had a severe fracture of the facial bones, cerebrospinal rhinorrhoea, maxillary sinusitis, mastoiditis and recovery. Then three cases are shown from the London Hospital that show the picture not so rosy. Case four is a compound fracture of the cranial vault, comminuted fracture of the anterior fossa of the cranial base, laceration, local purulent meningitis, abscess of the right frontal lobe and death. Cases five and six are examples of fatal meningitis as an immediate sequel of fracture of the cribriform plate. This is by far the most dangerous fracture as regards intracranial infection.

Group two shows the delayed complications of fracture into the frontal and ethmoidal sinuses. Group one showed the immediate effects of fracture, while this group shows complications that may occur at a later stage. Case seven is a fracture of frontal sinuses, injury to right optic and both olfactory nerves, subsequent development of right frontal aerocele and cerebrospinal rhinor-

rhoea, operation-evacuation of intracerebral air and closure of dural tear and recovery. The injury was the result of the patient colliding with a van while riding on a motorcycle. The cerebrospinal rhinorrhoea started 11 weeks following the accident. At no time did he have an elevation of temperature suggestive of meningitis. The operation (under local anaesthesia) was necessary to remove the air to stop the rhinorrhoea. The pyramidal signs of paralysis gradually disappeared. The entry of the air into the brain approximately 11 weeks following the accident was probably due to blowing the nose and sneezing. Case eight was a fracture of the frontal sinus, purulent meningitis and intracranial aerocele following a cold three years later, drainage of the frontal sinus and recovery. The accident occurred three years before he entered the hospital suffering from meningitis. The patient had been in a motorcycle accident and was unconscious for two weeks at that time. During the three years he had many colds and headaches. His present illness accompanied a cold, lachrymation and nasal discharge. Case nine was a fracture of the cribriform plate of the ethmoid, abscess of the brain and purulent leptomeningitis two years later and death. Post mortem showed evidence of a recent infection of the paranasal sinuses spreading into the leptomeninges and into the brain at the site of the old fracture.

Group three includes operation injuries which occur during the course of operation such as transfrontal craniotomy, opening the sinus when operating on pituitary or suprasellar tumors, etc. Case ten was a Chronic Pan-sinusitis. Operation: Trans-nasal drainage of the right antrum and right ethmoid cells, cerebrospinal fistula, subdural haematoma, leptomeningitis and death. Case 11 was a chronic pan-sinusitis and asthma, operation, trans-nasal drainage of right sphenoidal sinus, perforation of the cribriform plate, cerebrospinal rhinorrhoea, diffuse leptomeningitis and death. Case 12 was a mucocele of the right frontal sinus, operation, removal of mucocele and drainage of sinus, cerebrospinal fistula and spontaneous recovery.

Group four includes cases of spontaneous cerebrospinal rhinorrhoea. The causes of this condition are usually due to (a) hydrocephalus with slowly growing intracranial tumor in any situation; (b) frontal and ethmoidal osteomas; and (c) pituitary tumor. Here are shown two cases with X-rays of congenital deficiencies of the cribriform plate. With increased intracranial pressure a cerebrospinal rhinorrhoea may result.

Group five includes injuries of the sphenoidal sinus. These are not so common. Case 13 is one of an expanding intrasellar lesion, head injury, sella and suprasellar aerocele and spontaneous recovery.

The author has a comprehensive conclusion. Many X-ray pictures accompany the article illustrating various phases of the cases. There is a bibliography.

The Dowling Treatment.—Thirty Years of Observation and Results. Irving J. Dowling, M.D., F.A.C.S., Albany, New York. The Eye, Ear, Nose and Throat Monthly, November, 1937.

Dowling explains his technic minutely with drawings and words. He reports good results. As a result of having treated several thousand patients by this method he comes to the following conclusions.

1. Silver colloids are of distinct value in the local treatment of both acute and chronic sinus diseases.

2. The best method of employing colloidal silver preparations in the treatment of sinus disease is by means of nasal tampons according to the Dowling method.

3. Clinical experiments and observations during a period of over 30 years accords Argyrol first place because of its positive remedial value in treatment, and, because of its unique and positive value in determining the presence of pathogenic infections within the nasal chambers and accessory sinuses in spite of negative radiograms or other negative findings.

4. Positive Dowling reaction in the presence of symptoms unrelieved by treatment is sufficient evidence to warrant operation, even though X-ray findings are negative.

5. Argyrol tampons are a valuable aid in treatment and through their use a near approach to sterility may be attained preparatory to many intranasal or sinus operations.

6. As a postoperative procedure, much intranasal or sinus surgery of doubtful issue may be rendered successful.

7. Acute rhinosinusitis uncomplicated by chronic pathology is readily cured in from one to several treatments conducted over a period of from one to four or five days.

8. Chronic pathology obstructing the nasal meatuses and blocking the drainage and ventilation of the sinuses is so influenced by nasal tampon treatment that normal drainage and ventilation of the sinuses is obtained, thereby avoiding operation in many cases; or where surgery is necessary, making it possible to attain success by less radical procedures than may at first have seemed necessary. In addition, an interval operation is made possible in cases of recurrent sinus attacks, making more likely successful issue in cases of this trying character.

9. Headache. — The daily early morning headache, the vacuum headache, and the "Sluder syndrome," all so diagnostic of sinus disease, are readily overcome, providing the pathology is not typically of surgical nature.

10. Both the Eustachian tubes and lachrymal canals are so readily benefited, that dilation of these canals is rendered less difficult and the beneficial results more permanent.

11. Eyes.—Many inflammatory diseases of the eyes exhibit a quicker response to treatment if the usual recognized treatment is supplemented by nasal treatment of the sinuses.

12. Asthma.—Acute asthmatic attacks ofttimes may be controlled for the time, by the Dowling method without the aid of other measures. The Haseltine-LaForge treatment, than which no more successful treatment has yet been devised for chronic bronchial asthma, includes the proper use of nasal tampons saturated in 10 per cent Argyrol solution.

13. Aggravations of varied kind and severity are possible from the use of Argyrol tampons, but such effect does not contraindicate their use. These unfortunate effects excited by the treatment are most apt to occur in women immediately before, during, or soon after the occurrence of the menses.

Allergic Diseases of the Ear. Dr. L. W. Dean, Dr. J. S. Agar, and Lloyd D. Linton, B.S., St. Louis. The Laryngoscope, October, 1937.

Many authors are mentioned in the review of allergic lesions of the ear. Hansel has the most complete review. He states: "In allergic individuals it is quite impossible to make a diagnosis of allergic otitis media unless a marked predominance

of eosinophils is demonstrated in the aural discharge."

The Meniere symptom complex is discussed by Hansel, i.e. vertigo, deafness and tinnitus. Dean et al. found that about 20 per cent of their cases of allergic rhinitis had ear symptoms, including the Meniere symptom complex. Those who had a Meniere symptom complex had severe types of allergy.

Interesting symptoms of allergic patients in order of frequency are given in Table I. They appeared during allergic attacks or when allergic tests were being made. The symptoms are: stuffiness or fullness of ear or ears; subjective loss of hearing; shooting or dull pains in ears; itching or sensation of something crawling deep in ear; continuous high pitched tinnitus; vertigo: nausea (especially when ear reactions are precipitated by a leukopenic index test but also independent of this); extreme nervousness and irritability: hyperacusis; syncope. Skin tests did not produce symptoms, while mucosal tests, leukopenic index tests and contact or ingestion of the proper allergens did.

In Table II there is given subjective symptoms resulting from a positive leukopenic index finding. They are: itching of the ear; fullness in the ear; pounding in the ears; ears feel blocked; earache; feeling of pressure in the ear; feeling of tightness and of drawing about the ear; the ear feels swollen; nausea and dizziness; decreased hearing.

There appeared to be not any connection between the severity of the symptoms and the appearance of the drumhead. With adrenalin all ear symptoms were controlled, except tinnitus. This was improved. One case is here reported of the tinnitus disappearing under allergic treatment. In this report of allergic cases, it was found that the tinnitus of the allergic patient was not always due to an allergy. Loss of hearing was usually in the lower tones as confirmed by the audiogram. Patients with chronic middle ear changes did not show improvement. The authors state: "Characteristic of deafness due to allergy is a variation from day to day, from week to week, and from year to year without objective changes in the tympanic membrane." The itching mentioned is always deep and the patient may also complain of an itching in the roof of the mouth.

The authors have divided their reported cases into groups recognizable by different groups of symptoms constituting a syndrome. Group one includes the Meniere symptom complex or a crisis of the VIIIth nerve. Three cases are shown in the group. Group two includes those with Meniere's symptom complex with unconsciousness. One case is detailed in this group. Group three comprises the largest group; characterized by decrease in hearing with a positive Rinne; sensation of fullness in the ear, usually itching, earache, tinnitus and sometimes, vertigo or nausea, or both. Two interesting cases are detailed in this group. Group four is characterized by migraine and ear symptoms. One patient is reported for illustration.

Allergic rhinitis has a common complication, otitis media. This is prevalent during inclement weather. During the two year study of the authors they have encountered few acute otitis media complications. Recurring attacks of acute otitis media in the presence of an allergic condition produce the same untoward effect on the hearing as those due to adenoids.

An acute otitis with allergic rhinitis yields to the usual treatment of a mild injection, while an acute allergic sinusitis yields only to allergic treatment. Prevention of the acute otitis is to control the allergic rhinitis and the eradication of the resulting vasomotor rhinitis.

An extensive bibliography accompanies this report.

Retinitis of Pregnancy. Lieut.-Col. Sir Jamshedji N. Duggan, Kt., C.I.E., O.B.E., D.O. (Oxon.) V.K. Chitnis, D. O. (Oxon. and Bom.), M.B., B.S. (Bom.), F.C.P.S. British Journal of Ophthalmology, November, 1937.

The Sir C. J. Ophthalmic Hospital in the past three years has had several cases of retinitis of pregnancy and three interesting cases are here reported. All three were Mahommedans.

The first case was age 25, para 3. Her chief complaint was a failing vision in both eyes. The pregnancy was of seven months duration. Soon after her vision began to fail, she developed an oedema of both legs. She could only count fingers at four to six feet. Fundus picture was a well-developed neuro-retinitis with exudate and oedema in the retinal tissues, well-marked, soft edged cotton-wool patches were present. Detachment of the retina was present downwards and inwards in both eyes. Eliminative treatment was advised. Labor was induced. Immediately the patient began to feel better and the toxic symptoms began to disappear. Fundal exudates rapidly disappeared and the retina re-attached itself in both eyes with marked improvement of vision.

The second case was age 35, para 4. In her seventh month of pregnancy she developed such signs as toxaemia, insomnia, headaches, pain in the praecordial region, fever and cough: B. P. 230-160. B. P. after induced labor was 168-116. A week or ten days after labor was induced she had her first fundus examination. A tentative diagnosis was made of neuro-retinitis, probably of renal origin. Three weeks later another fundus examination was made, which showed arteries silver-wire; right-star figure present macula and left a few hard dots; veins tortuous and irregular calibre; secondary atrophy showing sings of approach; dark brown pigment patches (probably absorbing hemorrhages). There was no detachment of the retina. After induced labor her vision improved (she gave a history of dimness of vision with two previous pregnancies). This was an atypical case of retinitis of pregnancy. It was probably primarily a chronic nephritis, which makes for a graver prognosis.

The urine in the two previous cases was that of a nephritis. The urine of the third case was normal. The third case was age 24, para 4. Only the right eye was affected. The retina was opaque with some of the exudates still having soft-edged wooly characteristics. The disc appeared to be almost enveloped by them. There was no detachment of the retina and no hemorrhages. B. P. 90-65. She was seen one month after termination of the pregnancy for her impaired vision in her right eye.

All three cases had had previous pregnancies. Symptoms of the retinitis appeared in about the seventh month of pregnancy. Wasserman was negative in all three cases. The first case was undoubtedly directly due to toxemia of pregnancy; the second case had her chronic nephritis aggravated by toxemia of pregnancy; and the third case probably had the condition due to her toxemia (although examined late).

Semple's characterization of retinitis of pregnancy: "The sudden onset, the tremendous exudation into retina, the equally sudden cessation on removal of the cause if done promptly enough, the subsequent and complete restitution of visual

acuity, all are in marked contrast to the usual course of retinitis of other forms of Bright's disease."

The renal retinitis complicating pregnancy is associated with high blood pressure, both of which tend to persist in a lesser degree after delivery.

ORTHOPAEDIC SURGERY

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Fractures and Dislocations of the Cervical Spine, Sumner M. Roberts, M.D., Boston, Mass., Jr. Bone & Joint Surg. Vol. XIX, No. 1, Jan. 1937.

The author begins by explaining that a broken neck is not synonymous with "death," as many laymen think. Many injuries occur to the cervical spine, however, in which the cord is not damaged, or if damaged, only slightly, so that very good result may be obtained by proper treatment. Unfavorable sequelae, such as deformity and discomfort, may be prevented in most cases. Treatment of a fracture or dislocation of the cervical spine should be carried out the same as a fracture or dislocation of any other part, i.e. reduction should be accomplished as soon as possible followed by immobilization for a reasonable length of time. Symptoms of fracture may be from slight stiffness of the neck to more severe deformity. The physical examination usually reveals tenderness over the spinous processes of the injured vertebrae. There may be tenderness lateral to the injury and pain and muscle spasm are present. Peripheral nerve symptoms may or may not be present. These are due to compression of the nerve roots as they emerge from the cord. There may be hemorrhage anterior to the bodies with swelling in the pharynx and dysphagia. Extensive injury may damage the cord so that there will be minor paralysis on to more major forms on to complete paralysis.

Examination should first be made neurologically to determine the possible nerve damage. This is conducted with the patient lying down. In case there is no neurological disturbance the patient may then be examined in a chair. Never allow forward flexion of the cervical spine. Preliminary care is very important and should be carried out before a definite diagnosis is made by X-ray examination. Further injury should be prevented by head sling and traction.

In making the final diagnosis the history of trauma is important. Usually this is violent. Symptoms locate the injury more definitely, but do not differentiate between fracture and dislocation. Pain is an unreliable guide.

In the physical examination tenderness and the location of tenderness are very accurate, usually, in localizing the level of the lesion. There is less motion possible in a neck that has had a fracture than in the case of a simple dislocation. The roentgenogram is the most valuable asset and one on which the final diagnosis is made.

Treatment consists first in attempting to realign the bone as it was prior to fracture. Generally this is done by traction and hyperextension and the patient should be completely anesthetized for this. The neck should then be immobilized in a plaster cast. The author advises a plaster jacket extending around the head, cervical region and down to the crest of the ilia. Adequate space is cut out for the eyes, ears; space may be left on the top of the head; the arms are permitted full motion and a window is cut out over the abdomen. The weight of the cast should be borne on the crest of the ilia.

The time of fixation with the plaster jacket varies according to the severity of the injury. For fractures of the spinous processes a fixation period of four to six weeks is sufficient. In more severe cases the fracture is next immobilized in a molded leather collar which fits around the thorax and up under the chin, well up over the occiput with a strap around the forehead. This is worn for a few weeks, followed by the simple Thomas collar which is worn until all support is discarded. The author immobilizes more severe cervical fractures up to at least six months, and gradual removal of the fixation is advised rather than removing a firm fixation to permit free motion. The author always advises exercises of the cervical region to be done while lying down, toward the last few months of immobilization so that when final immobilization is removed the muscles are strong enough to support the head.

In fractures of the vertebral bodies it is advisable to maintain strong hyperextension of the cervical spine for a period of five to six weeks in bed, followed by the plaster cast and then the molded leather support.

The author cites cases of fractures of the spines, the odontoid, the laminae, pedicles, and bodies, so that each is taken up and the exact treatment described.

Part two of this paper appears in the Journal of Bone and Joint Surgery, Vol. XIX, No. 2, April, 1937, by the same author, and primarily is on dislocations of the cervical spine.

The anatomy of the cervical spine is mentioned briefly, particularly in relation to the articular facets, which in the upper vertebrae are virtually horizontal and in this case a sheering or twisting force meets with no bone resistance except the odontoid process. As we approach the lower cervical spine, however, the articular facets are set more vertically so that dislocation is rare in this region.

The diagnosis of dislocation of the cervical spine is made similarly to that of fracture. There may be less injury, however, and the head is usually held in a characteristic position. In unilateral cases, for example, with a dislocation on the right, the head will be turned toward the left and tilted to the right. The explanation for this is that with the upper facets slipped forward on the right side so that it hooks over the lower facets, the riding forward turns the head to the left, while the process slipping off forward, allows the head to drop to the right. In incomplete dislocation the rotation of the head is present but the tilting is less pronounced. In bilateral complete dislocation the head is tipped forward without rotation. In this position of rotation or "torticollis," one must rule out such conditions as myositis, ligamentous strain, cervical adenitis, or any condition that may cause a spasm of the muscles of one side of the neck, especially the sterno-mastoid. Again X-ray makes the final diagnosis.

Treatment consists of immediate reduction of the dislocation, followed by plaster fixation as in any other injury of this type. In incomplete dislocation, hyperextension and traction are sufficient. In complete dislocation reduction may be accomplished under anesthesia. The anesthesia must give complete relaxation. Manipulation may be done after the method of Walton who described it in 1904. The author feels that the dangers of manipulation by skilled hands have been overestimated and that when done properly there is no danger and an excellent result can usually be obtained. Brute strength is not necessary. He does

not advise to attempt reduction of a dislocation in the presence of a fracture. The author has treated one case of dislocation ten months after the injury with marked improvement in the clinical findings, although there was very little improvement in the X-ray findings. In complete dislocations the head is held in plaster for two months, in leather collar for two months and in a Thomas collar for two months, as in fractures. In incomplete dislocations three months of immobilization will usually suffice.

Complications consist of delayed pain, which may come on in untreated cases, sometimes after weeks or months. Occasionally this occurs after treatment. Re-dislocations may occur, presumably due to too early removal of the immobilizing agent. Reduction should again be attempted, in such case with prolonged immobilization.

Open operation is indicated for three reasons: (1) an attempt to correct the deformity by open operation in case closed reduction has failed; (2) the spine is stabilized because of fear of recurring deformity. This is done especially in case of fracture of the odontoid in which there is delayed or non-union. (3) Where there is evidence of cord compression and requires a laminectomy to relieve this. Unfortunately this is the most common type necessary to do so.

A decision to do a laminectomy depends on whether there is permanent injury to the cord or not. Many times it is impossible to determine whether the injury has been simply momentary or is pressing on the cord prior to operation. In this case spinal puncture will reveal whether there is pressure on the cord or not. If there is a block then pressure is present at the time of the examination. In case the block no longer exists it is not necessary to operate.

The mortality in the series of 37 cases was seven or 19 per cent. Forty-two per cent died with compression fractures; two had slight dislocations, which probably played no part in the picture. Death occurred in 12 per cent of the cases of dislocation. One of the dislocation deaths was due to post-manipulative pneumonia, which leaves a mortality of six per cent actually due to the injury itself.

The author cites a number of cases and gives tracings of the roentgenograms of these cases.

Conclusions include the fact that fractures and dislocations of the cervical spine should be treated as other similar injuries, i.e. immediate reduction. Fractures are more serious than dislocations. Fixation after reduction must be complete and of long duration. Early complications cannot be avoided, but proper treatment begun early will lessen their permanent effects. Operation is rarely indicated except to relieve late cord symptoms.

Comment by the abstractors: It has been our privilege in the past two years to treat about eight such cases as the author describes. We feel that he is entirely right in his statement that early reduction must be accomplished. This can be done by a skilled operator with virtually no danger to the patient. After reduction, adequate immobilization is necessary. However, we feel that more operative intervention is necessary than the author indicates, in that many cases although apparently requiring nothing further than immobilization, will do better with simple fusion of the spinous processes. This gives better stability, very slightly limits the motion in the neck, and certainly reduces the danger of reinjury in this region. Furthermore, the period of immobilization can usually be lessened by this procedure.

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INTERNAL MEDICINE

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BY HUGH JETER, M.D., F.A.C.P., A.S.C.P.

Familial Shift to the Left of the Leukocytes (Pelger's Nuclear Anomaly of the Leukocytes), with Report of a Case, by Wilder Tileston, M.D., New Haven, Connecticut.

This is a report of an interesting case in which there is a familial shift to the left of the leukocytes. Literature is discussed and evidence is presented indicating or emphasizing the familial factor in this condition. It is suggested that the anomaly may even be of medical legal importance as regards questions of identity and paternity.

The Necessity of Certain Criteria For The Diagnosis and Cure of Rheumatoid Arthritis, By Russell L. Cecil, M.D., F.A.C.P., New York, N. Y.

The author stresses herein the importance of establishing certain criteria for the diagnosis of rheumatoid arthritis and also for the treatment. Diagnostic criteria are:

(1) PATHOLOGICAL. Gross pathological appearances of joints are not considered sufficient. Biopsies or histological studies are indicated in some cases. "A vascular granulation tissue containing collections of lymphoid cells which often resemble true lymphoid follicles, presents a picture which one never sees except in rheumatoid arthritis."

(2) CLINICAL. This is considered more important of all and the most characteristic finding is to be the fusiform finger. Multiplicity of joints involved is also important. The subcutaneous nodules are considered almost pathognomonic.

(3) RADIOGRAPHIC. In the very early stages there are no typical manifestations. Soon, however, the roentgen-rays begin to show the characteristic decalcification of the bones and the soft tissue swelling. As the disease progresses there is narrowing of the inter-articular space due to thinning of the cartilage, and blurring of the whole joint architecture. Several writers have stressed the peculiar punched-out areas, which are a prominent feature of rheumatoid arthritis, and occur just as frequently in this disease as in gout. In the latter disease, however, the punched-out areas are much larger than those in rheumatoid arthritis. In the final stages of rheumatoid arthritis the joint surfaces may become fused through fibrous or bony ankylosis, and in deformed joints there may be subluxation or dislocation. In the late stages hypertrophic changes may be observed, but this should not lead to confusion of the disease with osteo-arthritis.

Can a definite diagnosis of rheumatoid arthritis be made from the roentgenray pictures alone? In very early cases, no. In well established cases, yes, in a high percentage of cases. Occasionally, a gonococcal arthritis might be a source of error, but the anamnesia and other clinical data would prevent a mistake in diagnosis.

(4) SEROLOGICAL: Positive Streptococcus agglutination reaction is present in a higher percentage of cases of rheumatoid arthritis and should, therefore, be looked upon as one of the important diagnostic criteria.

In connection with suggestions for criteria of cure the clinical condition is emphasized. Sedimentation rate should be returned to normal. Specific agglutins should not be present, leukocytosis

should not exist and there should be no anemia and the natural tendency to exacerbations and remissions should be considered and the patient not be looked upon as cured until he has remained free of symptoms for at least one to two years.

Factors Influencing the Prognosis in Diabetic Coma, by Edward S. Dillon, M.D., F.A.C.P. and W. Wallace Dyer, M.D., Philadelphia, Pennsylvania.

In this report the authors have reviewed the results obtained in 3009 cases of diabetes treated in the Philadelphia General Hospital during the six year period of 1931 to 1936; 268 of these patients were admitted in acidosis and it is from the record of these that the report is made. There were 129 uncomplicated cases and 139 cases with complications. Of the 268 cases 36.6 per cent total mortality resulted. In the 139 cases with complications there were 105 cases with infection as follows: Respiratory system (except tuberculosis) 36, gastrointestinal system 14, genitourinary nine, skin and subcutaneous tissues 16, feet 16, miscellaneous five, pulmonary tuberculosis nine. Of the 34 non-infections, seven were coronary occlusion, six hyperthyroidism, four acute acoholism, three cancer, two apoplexy, two hypertensive congestive failure and ten miscellaneous. Sixty-eight cases had postmortem examinations. A long list of patients dying "with" complications and another list of patients dying "from" complications are given.

The authors have previously published records of 16 cases in which the blood sugar was 1000 or above and in this report have added nine more such cases.

Interesting data concerning age, sex and color is given. Diabetic coma or conscious or unconscious groups were classified according to ability to arouse them sufficiently to answer "yes" or "no" to some simple question. The authors regard the importance of the mental state, the duration of the acidosis, the age of the patient and other clinical factors much more important in the prognosis than laboratory findings. However, frequent estimations of blood sugar and CO^2 determinations during the course of the acidosis are considered to be indispensable in properly gaging the doses of insulin and glucose in sufficient states.

The degree of leukocytosis seems to have been about the same in uncomplicated cases as in those in which complications were present. Blood urea determinations seemed to be of considerable aid in prognosis, the mortality increasing rapidly in those cases having 20 mgs. % or higher.

PLASTIC SURGERY

Edited by

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Pedicle Flap Patterns for Hand Reconstruction. George Warren Pierce, M.D., F.A.C.S.; Gerald Brown O'Conner, M.D., F.A.C.S., San Francisco, California. S. G. & O. October, 1937.

The delicate hand balance with its multiplicity of synchronized motions is dependent upon the normal functioning of the numerous structures of the hand including the dermal covering. A disarrangement of any of these structures has a material effect on total and partial hand movements. We will concern ourselves in this discussion only with the coverings of the volar and dorsal surface of the hand and fingers, and the methods of repair.

In all serious hand injuries requiring dermal replacement, the damage is not confined to the skin alone but there is consequent destruction of the subcutaneous tissue. This being true, the ideal method of replacement is that which will supply a pattern of skin and subcutaneous tissue in one piece so that the optimum in hand function and appearance can be assured. From a practical viewpoint, however, under certain conditions one may employ substitute measures which will fill the needed requirements and give gratifying results. With this thought in mind it behooves us to compare the use and application of the three standard methods of hand coverage: 1. The split skin graft. 2. The Wolfe graft. 3. The pedicle flaps as they are applied to our problem.

Several general principles concerning pedicle flap patterns should be considered when their use is contemplated.

1. The usual donor areas for hand repair are the abdomen, lower chest, thigh, and buttocks; the selected site depending upon the tissue availability as well as the type of material needed and the location of the injured area.

2. A one piece pattern of the exact size, shape, and thickness will give the most efficient result.

3. All pedicles and flaps, when possible, should be made to conform with Langer's skin lines and the district blood supply.

4. Venous stasis due to the lack of a blood channel outflow rather than a deficient arterial supply is generally the offending cause when tissue necrosis occurs. Multipedicle flaps correct this venous deficiency.

5. Bipedicle or multipedicle flaps are more certain of a complete take than unipedicle ones and should always be used whenever there is any question present as to the viability of the donor material.

The question as to the use of more than one nourishing pedicle to the dermo subcutaneous pattern is an individual matter and depends upon the experience and judgment of the surgeon. However there are several situations that are better met by using multipedicles: (1) when it is necessary to cut across the blood supply and Langer's lines to obtain the necessary donor material; (2) when that area to be grafted is over 1 square inch; (3) for all flap patterns on the volar surface of the hand and fingers: (4) when the pattern of the area to be grafted is irregular; (5) for total finger or thumb reconstruction; (6) when it is necessary to reduce the subcutaneous tissue to a minimum to obtain the proper flap thickness; (7) when due to the mechanics of the hand and arm and unreasonable stress or strain is placed on the limb when it is connected to the donor area; (8) when due to malposition of the opposing areas (donor or recipient) undue tension or torsion is imposed on the pedicle or flaps.

The application and management of the grafted tissue are two other important phases of this form of reconstructive surgery. There are certain general rules to be followed if one expects to obtain the best end esults.

1. The donor flap should be cut as a duplicate pattern of the denuded injured hand. This supplies sufficient covering material, keeps all the elements in the flap, including the vessels, under normal tension and in proper relation to each other, thus obtaining the optimum condition favorable to flap vitality.

2. There should be an absolute hemostasis of the recipient area and the donor flap. This prevents postoperative hematomas that are so de-

structive to grafts and stimulates circulation in the patent flap vessels.

3. Accurate approximation of the flap pattern to its bed eliminates dead spaces.

4. Exact apposition of the flap skin edges to those of its new position puts the flap edges under the best condition for early union by first intention and gives the eventual minimum in scar formation.

The time of severance of the blood supply to any of the pedicle flaps is entirely an individual problem. The average length of time for severing accessory pedicles is seven to ten days and it is not advisable in the case of a large flap pattern with many pedicles to interrupt too many at the first sitting. The average time for the severance of the terminal pedicle that makes the flap self-sustaining is two and one-half weeks. There are numerous things that influence the surgeons judgment as to the proper time to isolate the flap from its pedicle blood supply, such as (1) the rapidity of the take; (2) the size and circulation of the graft; (3) primary graft union; (4) presence or absence of infection; (5) number of nourishing pedicles; (6) the local conditions surrounding the graft; and (7) the general condition of the patient.

The pedicle flap pattern by its anatomical construction more closely fulfills the major reconstruction as a replacement tissue for all serious hand injuries requiring a covering; therefore when properly conceived and executed it gives the most favorable means for obtaining the acme in appearance and function. It is upon these considerations that we recommend its more general application in major hand injuries.

COMMENT

The authors have pointed out very clearly the technique of restoring skin to the volar and dorsal surfaces of the hands. The results obtained are excellent. Anyone seeing a hand which is denuded of skin can help by seeing that the skin is restored immediately especially in traumatic cases. If the loss of skin is due to a burn secondary to infection it is imperative to keep the hand and fingers in a position of maximum function.

It is almost impossible to restore function to a hand or finger if the subcutaneous tissues are fixed especially in extension. If the fingers and hand are held in semi-flexion then whatever reconstruction work is done there will be a more favorable framework position.

UROLOGY

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Present Status of Nephropexy and End Results of Three Hundreds Eighty-Four Operative Cases. Charles Pierre Mathe, San Francisco, California. Urologic and Cutaneous Review, November, 1936.

The paper consists of a critical analysis of 384 patients treated for ptosis of the kidney by nephropexy.

The author has reviewed the history of nephropexy, commenting on the fact that the operation has fallen in disfavor in the past due to injudicious choice of cases. Of late, however, more and more urologists are finding it particularly applicable in certain selected cases.

Most of the cases analyzed were found to be in the younger age group, from the second to the fourth decade; however, six children less than ten years old were operated. The symptomology of nephroptosis varied in the majority from a dull lumbar pain or gastro-intestinal symptoms to actual renal colic with or without infection.

The author describes his own technic for nephropexy which consists of placing a triangular suture in the renal capsule on its anterior surface and two posterior sutures on the convex surface in such a manner that fixation of these sutures over the 12th rib places the kidney in its correct position. He also performs renal sympathectomy where pain is a prominent feature of the case.

The mortality from nephropexy was found to be 0.5 per cent. The results have been evaluated from relief of symptoms, improvement in drainage by postoperative pyelographic studies and elimination of infection. Ninety seven and four tenths percent of his patients were relieved of their trouble, 1.3 per cent were improved, and 1.3 per cent failures were found.

The author's conclusions were that nephropexy in conjunction with renal sympathectomy in properly selected cases is a successful operative procedure.

COMMENT

The author's results are certainly enviable for this type of operation. He doubtless has carefully selected his cases to attain this end. A personal opinion exists that nephropexy is occasionally indicated, especially in those cases where disturbance of drainage of the renal pelvis is present and probably in a few cases in which renal pain alone is found. Possibly the removal of the sympathetic nerve supply, thereby relieving spasticities of the upper ureter and pelvis do as much good as mechanical fixation of the kidney.

The Late Effects of Acute Pyelitis in Girls, Lawrence R. Warton, Damon A. Gray and Harriet G. Guild, Baltimore, Maryland, J. A. M. A., November 13, 1937.

This study consists of a follow up examination of thirty adult patients who in their childhood had had one or more attacks of pyelitis. The examination consists of history, physical examination, culture of urine, phenosulphonphthalein test, and intravenous urography.

Despite the fact that in only two instances were the patients in what would be called poor health, over half of the patients (57%) had demonstrable definite abnormalities in the urinary tract. The pathological changes consist of persistent bacteriuria, hydronephrosis, inflammatory changes in the renal pelvis and calices and two cases of stone formation. Three of the patients had borne children with but one having had pyelitis during pregnancy.

COMMENT

An extremely interesting observation that emphasized the importance of properly following up children who have urinary tract infection. The author himself comments that it is not necessary to cystoscope every child who has an infection but certainly several months after symptomatic recovery an intravenous urogram and study of the urine culturally for persistent infection should be done. One cannot determine by physical signs or symptoms alone whether residual lesions are present. Only by such observation may we prevent crippling disease of the kidneys later in life.

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